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of the provisional agenda

## ANNUAL REPORT OF THE DIRECTOR-GENERAL FOR 1992 ON THE ACTIVITIES OF THE ORGANIZATION

Progress report on specific activities

Submitted by the Director-General

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## Introduction

1. To facilitate the discussions of the Industrial Development Board of some of the items or sub-items of its provisional agenda, a compilation has been prepared of progress reports updating or supplementing the information provided in the Annual Report of UNIDO, 1992. The progress reports cover topics for most of which - in line with the recommendations of the Board on conduct of business and rationalization of proceedings (IDB.5/Dec.46, annex, paras. 8 and 9) - no documents have been prepared for the eleventh session other than the Annual Report.

## I. ACTIVITIES IN THE FIELD OF ENERGY

2. Energy-related activities carried out by UNIDO are reported on under various headings of the Annual Report. The present document will focus on the progress made in implementing decision IDB.10/Dec.2 of the Industrial Development Board. In that decision, the Board requested the Director-General: (a) to continue his close cooperation with other international organizations active in the field of energy, in particular with regard to sustainable industrial development in the follow-up to Agenda 21; (b) to make efforts in consultation with national and local institutions to identify and evaluate specific needs of Member States in the industrial field of energy to create suitable projects to address specific problems at both national and regional levels; (c) to promote the strengthening of the capacity of developing countries to develop energy-related technologies and produce energy-related equipment; (d) to enhance promotional activities for the adoption of new and non-polluting energy technologies, renewable energy sources, and efficiency improvement measures in the industrial sector; (e) and to mobilize extra-budgetary resources and technical expertise for the implementation of the above activities.

3. The UNIDO energy programme has concentrated on: alternative sources of energy; development of training programmes for energy conservation; development of technology aimed at reducing energy usage; and better choice of options and optimization of fossil fuel production and use. Through project implementation, expansion of the UNIDO databank, and the possibility of using technical staff under the United Nations Development Programme (UNDP) successor arrangements, the advisory capability of UNIDO has provided the Organization with an enhanced opportunity for involvement in various country and regional requests.

4. Cooperation with other international organizations active in the field of energy, as demonstrated through membership in the "Vienna Four" (a group composed of UNIDO, the International Institute for Applied Systems Analysis, the International Atomic Energy Agency and the Organization of the Petroleum Exporting Countries), has enhanced the Organization's activities with respect to energy policy and pricing assessment. The "Vienna Four" is now institutionalized and a work programme, prepared by the group, was discussed by the executive heads of the four organizations at a meeting in January 1993. It is an important programme among the four organizations for matters of policy regarding the supply and demand aspects of energy, which will make the group more cohesive and enhance the capabilities of the four agencies to assist developing countries in meeting their energy needs.

5. The UNIDO energy programme, which is focused on energy derived from fossil fuels (oil, coal, gas) and new and renewable sources (wood, wind, solar, water, geothermal, biogas, etc.), is instrumental in strengthening the energy capacity of developing countries. It is increasing the awareness of Governments in developing countries to energy options through cooperation in such areas as technology transfer, institution building, policy planning, energy management and human resource development. The important issue of conservation of energy, which is closely linked to maintenance, choice of technology and training programmes for better management of energy, cuts across all these areas and contributes to sustainable development on the one hand and on the other hand responds to global environmental concerns. In the context of the United Nations Conference on Environment and Development and the development of the World Bank's Global Environment Facility (GEF) the UNIDO energy programme requires adjustment and review in order to be able to respond more effectively to the needs of Governments and to make its contribution to industrial development within the United Nations system.

6. A number of major fossil fuel-related projects - regional and national - were promoted during the period under review either for the identification and evaluation of specific needs or as a follow-up thereto. Thus, in Africa, at the regional level, power generation and cooperation in power supplies is to be established in border regions between Malawi and Zambia, Mozambique and Zimbabwe, and Namibia and Zambia; and the need was identified for interconnecting power generation and a long-term power strategy in the Southern African Development Community (SADC) and Preferential Trade Area for Eastern and Southern African States regions. In suburban and urban areas, where petroleum products are a major import of the country, an audit of energy processing for domestic and industrial use will be requested in order to reduce costs of transportation, distribution and storage of petroleum products. An energy audit will also be required in industries where fuel is a major expenditure in order to achieve energy conservation or substitution. It is in that context that a study was undertaken for the SADC countries (IDB.10/18/Add.1, para. 2). In Kenya a project in energy auditing and identification of energy-saving measures is under implementation.

7. With the completion of a project for the establishment of a regional petroleum training centre in Angola for the needs of SADC countries (IDB.10/18/Add.1, para. 2 and IDB.11/10, chap. V, para. 41), and at the request of the Ministry of Energy to expand the capabilities of the centre to benefit individual countries at the national and regional levels, a study was completed in December 1992 to serve as a basis for the second phase of the project. The draft of a final report was presented for decision at the Technical and Administrative Unit and SADC Energy Ministers' meeting in February 1993. The recommendations include the introduction of new training courses and organization of the cooperation framework between the centre in Angola and other training

institutions in the region. Implementation of the recommended programme is estimated at $15 to $20 million over a period of five years, based on the cooperation of financial institutions such as the African Development Bank (AfDB) and the Norwegian Agency for International Development (NORAD). A similar request was made by AfDB for the Africa energy programme, with UNIDO selected as a cooperating agency.

8. In the Arab countries, UNIDO cooperated with the Arab Industrial Development and Mining Organization to prepare manufacturing profiles of energy equipment for use by the electrical industry of the region to produce small- and medium-scale generators, transformers, distribution boards, capacitors, underground cables (particularly medium-voltage cables), insulators, high and ultra-high voltage cables and towers, high voltage circuit breakers, and to undertake a market analysis.

9. In Asia and the Pacific, several missions and projects are underway in China, such as the promotion of technology and know-how in the natural gas industry. Following a study carried out jointly with the World Bank, a project may soon be implemented to establish a regional gas training centre in Sichuan Province. Another project was approved, dealing with transfer of technology to design, engineer, construct and operate associated petroleum gas processing plants using skid-mounted units in Lanzhou Province. The energy programme undertaken for China in 1992 (IDB.10/18/Add.1, para. 7) has led to two coal utilization projects, with UNIDO providing the technical expertise. One provides technical assistance to industry to ensure that the steam and power generated from the use of coal for industrial production are utilized so as to minimize energy costs, while the second is based on a new technology for the recovery and utilization of chemicals from coking. A third project, aimed at providing immediate assistance to the Foshan Testing Centre in China for low-voltage electrical devices, will strengthen and expand the Centre's capabilities. Another project was approved to design a shallow draft vessel for coal transport in China. UNIDO will cooperate with the implementing agency through provision of technical support services at the project level (TSS-2) and administrative and operational services (AOS) components.

10. In Viet Nam, assistance continued to be provided for selection of technology and location of a large petroleum refinery, while in the Democratic People's Republic of Korea a project is under implementation to improve the quality of components for energy distribution systems through the establishment of a high-power laboratory. Technical assistance in petroleum refining and petrochemicals is being provided to a research and development centre in Pakistan. A typical example of requests in the field of energy is that for a small follow-up project on energy conservation and environment improvement in petroleum refineries in India. In Malaysia, an ongoing project is aimed at strengthening and supporting local capabilities in the development of petroleum and natural gas industries and may lead to further UNIDO involvement.

11. Following successful previous assistance, several projects in Latin America are in progress, such as the one relating to the operation of the Esmeraldas refinery in Ecuador and the project at the Havana refinery in Cuba to improve energy efficiency of the heaters. In Uruguay, technical assistance was provided to the Ministry of Industry and Energy for dissemination of new techniques in charcoal production and wood gasification in rural areas. A project is underway to assist the Belize Electricity Board in identifying and assessing strategies to control electricity demand and plan the supply using computer-based modelling and analysis techniques.

12. In all the above projects, the energy balance, from modification of the basic process design to changes in operating procedures, has demonstrated that reducing energy consumption is both feasible and profitable. Energy conservation measures were integrated automatically in projects dealing with energy-intensive industries such as cement, building materials and glass industries.

13. Projects recently undertaken by UNIDO on new and renewable and non-polluting energy sources such as hydropower, solar and wind include a project in Madagascar for the local fabrication of solar water heaters for domestic use, which is nearing completion following successful pre-series utilization tests; also in Madagascar, a prototype of a solar dryer for medicinal plants is now operational; a techno-economic study and detailed design for a mini-hydro power plant was carried out for a rural area, with four different alternatives proposed, and financing is presently being sought for the low-cost version. In Egypt a project aimed at the local manufacture of wind turbines for electricity generation has been completed, with a capacity of 110 kW. Four units are providing electricity for a sea-water desalination plant which was also installed under the project (see also chap. XII, UNIDO environment programme, paras. 99-100).

14. In order to reduce the rapid deforestation in Africa resulting from the intensive use of wood fuel in rural areas, technologies for improved efficiency in wood- and charcoal-based energy, for example a prototype stove, are being produced for use in remote areas and for women's groups.

15. UNIDO has cooperated with the Government of the Democratic People's Republic of Korea to implement a project intended to satisfy local energy needs in indigenously produced power equipment for the stable transmission and distribution of electric power throughout the country. A regional project has enabled developing countries to undergo training and to exchange experience in the field of mechanical and electrical engineering related to small hydropower plants in the Asia and Pacific region.

16. Continuous efforts are being made in mobilizing financial resources for follow-up projects (cf. para. 7 above). Furthermore, in 1994-1995 UNIDO is expected to play a major role in the programme of the World Bank's GEF in the area of climate change as impacted by the reduction of emissions through the introduction of better management and conservation of energy. Under GEF, specific programmes for climate change will be produced for Eastern Europe. Special efforts will also be embarked upon for capacity-building under the "Capacity 21" initiative of UNDP, which will provide a basis for financing in the following areas: energy conservation; training programmes to promote awareness of

technology development for better and safe use of fossil fuel; and the introduction of alternative sources of energy for countries with limited or no energy supplies for industrial development. Another source of funding will be available through voluntary contributions to the Industrial Development Fund (IDF).

## II. UNIDO TECHNICAL COOPERATION ACTIVITIES IN 1992

17. In Board decision IDB.7/Dec.11 the Director-General was requested to present an annual report on the technical cooperation activities of UNIDO. Information on such activities for 1992 is provided in the Annual Report of UNIDO, 1992 (IDB.11/10), in particular chapters I, III and V. A list of technical cooperation projects approved and/or operational in 1992 will also be made available to the Board as a conference room paper.

18. The following paragraphs complement the information provided in the Annual Report by reporting on progress achieved in the implementation of the measures called for in Board decision IDB.9/Dec.7, paragraph (k).

19. Activities and efforts made with respect to the special regional programmes (IDB.9/Dec.7, para. (k)(i)) are described in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III, paras. 84, 91 and 109) as well as in chapters III, IV, V, and VI of the present document with regard to the Second Industrial Development Decade for Africa, the Special Programme for the Industrial Development of Asia and the Pacific, the Regional Cooperation Programme for the Industrial Recovery of Latin America and the Caribbean and the Special Programme for Industrial Development in Arab Countries.

20. Concerning paragraph (k)(ii) and (iii) of that decision, particular attention was paid to improving coordination in the utilization of all sources of funds with the aim to increase the impact of technical cooperation activities. With that aim in mind, new terms of reference for UNIDO-administered sources of funds were issued and a new Programme and Project Review Committee (PPRC) was established (Director-General's Bulletin UNIDO/DG/B.41/Rev.1). In keeping with its terms of reference PPRC is also required "to review regularly the overall availability of UNIDO administered funds and to recommend optimum programming modalities, paying particular attention to the complementary use of funds". Consequently, attention was devoted in 1992 to ensuring complementary use of the Regular Programme of Technical Cooperation (RPTC) and the Industrial Development Fund (IDF). For example, the least developed country (LDC) component of RPTC was programmed together with the umbrella contribution of the Government of Italy for the UNIDO industrial action programme for LDCs in order to achieve greater impact. Further examples of complementary programming are included in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III.D). In the proposals for the programme and budgets, 1994-1995 (IDB.11/2) it is suggested to reorient the utilization of RPTC (major programme 600) in such a way as to be able to translate the medium-term plan priorities into action. This will be done in close complementarity with funds available from the general-purpose convertible segment of IDF. Another example of the complementary use of funds is the Latin American Regional Programme for Industrial Modernization of the Capital Goods Sector in which IDF and trust funds were combined in a multi-donor financial arrangement.

21. At the programme level, various working groups were established under PPRC, drawing upon the expertise from all the Departments, and other task forces were created to ensure coordination and to promote team work approach thus complying with paragraph (k)(iv) of the Board decision; at the project level, the introduction of splitting project allotment documents (PAD) removed one of the major obstacles for team work. Previously, a PAD was issued under the responsibility of one backstopping officer only. The experience in developing and implementing technical support services at the programme level (TSS-1) has shown that team work was the only realistic approach.

22. Despite the structural constraints, improved communication, coordination and collaboration among the units involved in resource mobilization, development and implementation (IDB.9/Dec.7, para. (k)(v)) was promoted throughout the programme and project cycle.

23. Technical monitoring (ibid., para. (k)(vi)) of projects was carried out through established mechanisms such as Project Performance Evaluation Reports, technical reports prepared by National Project Directors, Chief Technical Advisers and consultants, as well as through tripartite reviews combined with technical monitoring visits of technical staff, and in-depth evaluation missions, effective institution exchange systems and close coordination with local counterparts and United Nations Development Programme offices. In these established mechanisms and procedures the involvement of UNIDO Country Directors (UCD) as well as Junior Professional Officers (JPO) has been ensured. However, in countries with no UNIDO representatives, difficulties and ineffective monitoring have often been a consequence.

24. If an in-depth evaluation (ibid., para. (k)(vii)) is carried out with an expectation of a follow-up phase, the evaluation results are normally fully integrated into the project design of that phase. Generally, however, the coverage and inclusion of the feedback from thematic, terminal, in-depth or ex-post evaluation is the weak point in the project cycle and is still quite uneven. The problem can only be solved satisfactorily if the results of evaluation reports are effectively digested and taken into account early in the project identification/formulation stage. The Secretariat is currently working on how to achieve that objective.

25. Both technical and design aspects of project formulation play a key role in ensuring that projects meet quality criteria (ibid., para. (k)(viii), (x)) in terms of relevance, cost-effectiveness and sustainability. Thus, the importance of design methods such as the logical framework approach/objectives-oriented project planning (LFA/OOPP) and their application through both identification and formulation phases of the project development process (ibid.) was acknowledged. A plan for the introduction of LFA/OOPP at UNIDO was prepared in 1992 (see IDB.11/4-PBC.9/4, para. 14). At present UNIDO is adapting the LFA/OOPP method to its own needs on the basis of the categorization of UNIDO projects undertaken

in December 1992. At the same time the adapted method is being tested through: (a) the early advice provided by appraisal on the design of specific projects; (b) training workshops held in the first quarter of 1993 for UNIDO and the United Nations International Drug Control Programme; and (c) through appraisal (LFA/OOPP) workshops held in recipient countries to design specific large and complex projects. Training of UNIDO staff was initiated in May 1993 in a systematic fashion.

26. The solution to the problem, identified during an internal UNIDO workshop in 1992, of insufficient quality of UNIDO projects in terms of relevance, cost-effectiveness and sustainability, lies in the change of the management system of the project cycle. In addition to the introduction of LFA/OOPP, the project development process will incorporate screening at each hierarchical level of the organization to ensure the relevance, cost effectiveness and sustainability of potential projects, their conformity with the requesting country's own development programme and with UNIDO policy. The necessity or otherwise of a project management team responsible for their further development and implementation will also be decided at the project identification stage. The critical assumptions made with regard to the implementation of the plan to introduce LFA/OOPP remain largely valid (IDB.11/4-PBC.9/4, para. 15). Other conditions for achieving the desired project quality are that: (a) programming frameworks be developed for medium-term plan priorities; (b) UNIDO country strategies be formulated jointly with recipient countries (IDB.11/4-PBC.9/4 paras. 8-9); and (c) a system for the management of the programme and project cycle be established to define clear responsibilities including the role of the field representatives. The Secretariat is at present working on those issues.

27. With regard to the new concepts and approaches (ibid., para. (k)(ix)) adopted in General Conference resolution GC.4/Res.19 and their incorporation in the development of technical cooperation projects and programmes, a separate document was submitted under agenda item 14 (IDB.11/13).

## III. SECOND INDUSTRIAL DEVELOPMENT DECADE FOR AFRIÇA

28. The following is an update of the report on the Second Industrial Development Decade for Africa (IDDA, 1991-2000) as contained in the Annual Report of UNIDO, 1992 (chap. III, paras. 47-55), including follow-up actions undertaken in response to General Conference resolution GC.4/Res.8.

29. As part of UNIDO's support to the African countries regarding implementation of the Second IDDA and the promotion of subregional cooperation (GC.4/Res.8, para. 15), the first follow-up meeting on the subregional programme for the Second IDDA for West Africa will be held at Abidjan, Côte d'Ivoire, from 14 to 18 June 1993, in cooperation with the Economic Commission for Africa (ECA) and the Economic Community of West African States. In keeping with the new emphasis on the private sector (ibid., para. 13), the meeting will be attended not only by government representatives but also for the first time by those of the private sector including African entrepreneurs, industrialists, businessmen, manufacturers, members of research and training institutions, and representatives of the banking system. The meeting is expected to adopt a concrete implementation plan for the subregional programme that will spell out specific policy, institutional and other measures required to ensure the full implementation of the Second IDDA at the subregional level. Special emphasis will be placed on creating an enabling environment to foster the development of the private sector by facilitating mobilization of the necessary investment resources, technology acquisition and development, and local capacity building both at the subregional and national levels. This will be based on prioritized objectives and targets.

30. Preparatory work continues for the eleventh meeting of the Conference of African Ministers of Industry (CAMI) to be held in Mauritius (31 May - 4 June 1993), preceded by the meeting of the Intergovernmental Expert Committee of the Whole on Industrialization in Africa from 24 to 28 May 1993 (IDB.11/10, chap. III, para. 54). The CAMI meeting will be the first since the adoption of the programme for the Second IDDA by the General Assembly (resolution 47/177), and is expected to be attended by nearly all African countries - unprecedented in the history of CAMI. The theme of the Conference is "The cardinal role of the private sector in the industrialization of Africa", with a special focus on mobilization of required financial and technical resources for the accelerated industrial recovery and development in the African countries. The Conference is expected to adopt a declaration outlining the strong commitment of the African countries to the successful implementation of the programme for the Second IDDA at the national, subregional, regional and global levels.

31. A plan of action (IDB.11/10, chap. III, para. 52) for the harmonization of the Second IDDA and the Second United Nations Transport and Communications Decade (GC.4/Res.8, para. 9), was submitted to the nineteenth Meeting of the Conference of Ministers for Africa Responsible for Economic and Social Development and Planning (May 1992) of ECA, which reviewed the plan and decided to refer it to the forthcoming eleventh meeting of CAMI for consideration. The subject has therefore been included on the agenda of CAMI.

32. As also requested by resolution GC.4/Res.8 (para. 8), UNIDO has further enhanced close working relationships with African regional institutes and organizations, such as the Arab Maghreb Union and the Preferential Trade Area for Eastern and Southern African States, not only for the preparation but more significantly for the follow-up on the implementation of subregional programmes. Those regional institutes are fully involved in the related activities (IDB.11/10, chap. III, para. 53) namely the preparation of implementation plans for the IDDA programmes and the organization of the subregional follow-up meetings.

33. In the context of the efforts geared towards supporting African countries' activities for the mobilization of financial resources (GC.4/Res.8, para. 10), consultations with funding institutions were intensified in early 1993 on the possibility of undertaking joint projects in the area of energy, particularly with the World Bank, the United Nations Development Programme (UNDP) and the African Development Bank (AfDB). Other projects proposed include one for Zimbabwe by

AfDB, initiated by ECA, and an Afro-Arab trade fair in Tunisia, including an investment forum which the Arab Bank for the Economic Development of Africa has accepted, in principle, to finance and which will be organized by UNIDO. Specific projects and project concepts were prepared and discussed with those institutions with a view to securing their support and contribution for the implementation (ibid., paras. 11-12). This has contributed towards paving the way for the high-level consultative meeting on financing the Second IDDA (IDB.11/10, chap. III, para. 54). The consultations held with UNDP led to the inclusion of the Second IDDA in the priority areas for the regional programme for the fifth cycle (1992-1996) of UNDP (GC.4/Res.8, para. 14). Integrated sub-regional projects and programmes were prepared and submitted to UNDP for funding under the fifth cycle allotment. However, due to the financial difficulties facing UNDP at present, no specific funds allotment has yet been made to IDDA.

34. As requested in resolution GC.4/Res.8, UNIDO has continued to maintain and enhance its cooperation with the Organization of African Unity and ECA in support of the implementation of the programme of the Second IDDA. The UNIDO contribution will be reflected in the joint ECA/OAU/UNIDO progress report on the Second IDDA called for in resolution GC.4/Res.8 (para. 15) for submission to the forthcoming eleventh meeting of CAMI and subsequently to the fifth session of the General Conference.

## IV. SPECIAL PROGRAMME FOR THE INDUSTRIAL DEVELOPMENT OF ASIA AND THE PACIFIC

35. In response to General Conference resolutions GC.3/Res.18, GC.4/Res.9, GC.4/Res.10 and decision GC.4/Dec.12, the Special Programme for the Industrial Development of Asia and the Pacific has, in large measure, remained on course with its objectives of strengthening existing regional programmes and developing new ones, while ensuring that the special needs of the least developed countries (LDCs) are taken into account.

36. As indicated in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III, para. 89), a remarkable portion of the projects approved under UNIDO-managed resources were of a regional character. Thus, of a total of $4.5 million for Asia and the Pacific provided under IDF, regional project approvals were apportioned $1.4 million; under the Regular Programme for Technical Cooperation the share of regional projects approved was $450,000 out of an available amount of $859,000. However, projects proposed for financing under UNDP intercountry programme for 1992-1996 encountered problems as a result, inter alia, of the UNDP policy to encourage the secretariats of subregional groups to execute projects directly.

37. Regional projects approved in 1992 included the following: a programme for the use of energy-saving technologies in pulp and paper and glass industry; an expert group meeting on hydrogen as an energy alternative for developing countries; a seminar on promotion and assessment needs in standardization and quality control; development of a regional programme on environment management and cleaner production in the iron and steel industry; a seminar on industrial planning and development; a workshop for representatives from the telecommunications industry; a regional meeting on electronics packaging and ergonomic design; a regional training programme on technical economic regulatory aspects of medical products manufacturing; group training maintenance and repair of railway rolling stock; a workshop on women's participation in industrial decision-making; technical and managerial skills development for women in the garment industry; industrial automation in the textile clothing and footwear industries; seminars on promotion and application of the International Organization for Standardization (ISO) 9000.

38. The LDC component of the special programme focuses on agro-related metalworking industries, food-processing and marine fishing industries. In the metalworking industries, it may be recalled that a regional workshop on agro-related metalworking industries was held at Bangkok, Thailand, in November 1990 under the auspices of UNIDO and the Economic and Social Commission for Asia and the Pacific (ESCAP). As a follow-up to that workshop a publication was issued in January 1991 containing country briefs on the status of agro-related metalworking industries in the least developed countries of Asia and the Pacific. The regional workshop recommended one regional and a number of country-specific technical cooperation and/or investment projects. In 1992 phase one, for a total amount of $216,000, was approved under a special-purpose contribution to IDF for a regional project that would provide technical support to agro-related metalworking industries through the strengthening of existing networks for technology exchange (mainly the Regional Network of Agricultural Machinery, based at Bangkok); and for the promotion of economic and technical cooperation among developing countries (ECDC/TCDC), and provision of advisory services relating to, for instance, policy issues and raw material procurement. On a national basis, a project was sanctioned under the Regular Programme of Technical Cooperation (RPTC) to provide advice to an agricultural tools factory in Nepal. Seven LDCs in the region also benefited from an interregional meeting for cooperation among selected developing countries in the field of metalworking industry and related technologies held at Bandung, Indonesia, in October 1992.

39. With regard to the food-processing and marine fishing industries, a total of $194,000 was allocated under RPTC which allowed, inter alia, the holding of a UNIDO/ESCAP regional workshop on agro- and food-processing industries at Bangkok, Thailand, in November 1992. Representatives of the Food and Agriculture Organization of the United Nations also attended. At the workshop, the problems and constraints as well as the development potentials of those industries at country and intercountry levels were identified. Depending on the requirements of the countries concerned as regards problems to be addressed, it is planned that UNIDO will submit proposals to the respective Governments, either as programme packages for the development for food-processing industries in the respective LDCs or as problem-specific regional interventions to address common technical issues in a number of countries. Programmes and projects that receive priority support from the LDCs concerned will be finalized for presentation to potential donors, investors and ECDC/TCDC partners.

## V. REGIONAL COOPERATION PROGRAMME FOR THE INDUSTRIAL RECOVERY OF LATIN AMERICA AND THE CARIBBEAN

40. At its fourth session the General Conference in its resolution GC.4/Res.6, while appreciating the efforts of the Secretariat in launching the Regional Cooperation Programme for the Industrial Recovery of Latin America and the Caribbean, requested the Director-General to take a number of actions and report on them to the Board at its tenth session. Subsequently, the Board decided to schedule the consideration of the Regional Programme for its eleventh session. In order to comply with the reporting requirements set forth in Conference resolution GC.4/Res.6, the progress report to be considered at the eleventh session was already made available to the tenth session. That report (IDB.10/18), which provides an account of the execution of each of the measures requested in paragraph 1 of Conference resolution GC.4/Res.6, is complemented by the information contained in the Annual Report (chap. III.B, para. 109).

## VI. SPECIAL PROGRAMME FOR INDUSTRIAL DEVELOPMENT IN THE ARAB COUNTRIES

41. In addition to the activities described in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III, paras. 82-87), a number of important initiatives and activities have been carried out since December 1992, addressing the priorities of the Special Programme for Industrial Development in the Arab Countries as listed in paragraph 3 of General Conference resolution GC.4/Res.5. They were undertaken in compliance with that resolution and Industrial Development Board decision IDB.10/Dec.12.

42. A positive outcome of the 1992 Vienna inter-agency meeting (ibid., para. 84) was the agreement reached by the collaborating organizations on cost-sharing arrangements for three regional project proposals, as follows:

(a) A proposal to obtain technical assistance for improved efficiency in existing industrial establishments in Arab countries has been submitted for appraisal and possible approval. The proposed project is to cover Lebanon, Sudan, Yemen and the Palestinian occupied territories at a total cost of $240,000;

(b) Also to be submitted for appraisal is a project proposal to produce five quality manuals for different branches of industry, at a total cost of $170,000. Three new manuals to be prepared will deal with quality control on milk and milk products, on yeast and on soft drinks, while two existing manuals to be updated deal with quality control in cotton-based textile industries and quality control in general for the industrial sector as a whole;

(c) A project proposal on a programme relating to the status and development of the sugar industry in the Arab countries is to be submitted for appraisal with a total budget of $120,000, covering all the Arab countries.

43. In the meantime, the collaborating organizations decided at their 1992 Cairo meeting (IDB.10/12, para. 5) to convene the next meeting at Rabat, Morocco, 22 and 23 June 1993, at the invitation of the Arab Industrial Development and Mining Organization (AIDMO) to consider the following project proposals to be formulated by:

AIDMO - Sectoral study on the aluminium industry in the Arab countries; feasibility study for an integrated plant for the production of long and flat steel products in the Gulf region.

Economic and Social Commission for Western Asia (ESCWA) - Three feasibility studies in engineering infrastructure; five project profiles in the electronic sector; seminar on the industrial uses of laser.

AIDMO/ESCWA - Study on industrial policies and strategies in Arab countries.

UNIDO - Preparatory assistance for the development of a regional network among national R and D institutions; establishment of a computerized database for petrochemicals and a programme for the development and integration of the petrochemical industry in the Arab countries; cooperative programme for the development of indigenous engineering and management capabilities in the Arab countries.

44. Since the issuance of the progress report to the tenth session of the Board, UNIDO has approved new projects for regional industrial cooperation (GC.5/5-IDB.10/12) covering various disciplines, as follows:

- Preparatory assistance regarding the setting up of the trade information centre at the Secretariat-General of the General Union of Chambers of Commerce, Industry and Agriculture for Arab countries at Beirut, Lebanon;

- A UNIDO/ESCWA regional workshop held at Damascus, Syrian Arab Republic, in September 1992, on new and advanced materials and their impact on the economy of the West Asian countries;

- A workshop on top management in industry, to be held at Amman, Jordan in October 1993;

- The seventh International Technical Conference on Cement and Building Materials held in November 1992;

- A regional Arab preparatory meeting held at Damascus, Syrian Arab Republic, for the First Consultation on the Construction Industry;

- A workshop on investment projects promotion in the Arab countries, at Dubai, United Arab Emirates.

45. Encouraged by the positive results of the cooperation between UNIDO and the Arab collaborating organizations, more regional organizations have indicated their interest and readiness to contribute to the activities of the Special Programme for Industrial Development in the Arab Countries and to be part of its organizational mechanism. They include the Arab Union for Cement and Building Materials, the General Union of Chambers of Commerce, Industry and Agriculture for Arab Countries, the Arab Federation for Food Industries, the Arab Railway Union and the Arab School of Science and Technology.

46. However, more intensive efforts are required by all parties concerned for the mobilization of the regional resources, particularly the promotion of cost-sharing arrangements, with a view to promoting regional industrial cooperation among the Arab countries. The importance of the matter has been fully recognized by the collaborating organizations referred to in the previous paragraph, as well as by the League of Arab States and other regional organizations, that have agreed to devote particular attention to the task of financing the activities of the Special Programme for Industrial Development in the Arab countries.

## VII. INDUSTRIALIZATION OF THE LEAST DEVELOPED COUNTRIES

47. In compliance with paragraph 4 of General Conference resolution GC.4/Res.9, current operational activities of UNIDO in favour of least developed countries (LDCs) continue to focus on the key priority sectors in the medium-term plan within the context of the overall implementation of the Paris Declaration and Programme of Action of the Second United Nations Conference on the Least Developed Countries as well as the industrial action programme for the least developed countries adopted in Conference resolution GC.4/Res.10.* The priority areas include human resource development, industrial development in rural areas, macroeconomic conditions and mobilization of financial resources for industrial development, development of the industrial service, scientific and technological base, and integration of women in industrial development. Special attention was paid to international economic cooperation and arrangements for the implementation, follow-up, monitoring and review of all activities of the United Nations system in relation to the industrial development of the LDCs.

48. In addition to the information appearing in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III, paras. 56-62), the following paragraphs provide an update of UNIDO activities carried out thus far in 1993 to benefit LDCs, including several activities that were developed on the basis of past successes. For example, a regional workshop on identification, design, appraisal, monitoring and evaluation of technical cooperation projects was held in April 1993 at Niamey, Niger, for the French-speaking LDCs in Africa, similar to those workshops conducted at Kathmandu, Nepal, and Mangochi, Malawi, in 1991. Within the "seed" programme for the promotion of the traditional textile industry in West Africa (ibid., para. 58) a feasibility study for the creation of a national tissuthèque will be carried out in 1993 under the programme for the Second Industrial Development Decade for Africa. Complementary project proposals for the training of artisans and marketing have been prepared and are under consideration for approval.

49. In conjunction with the support programme to mobilize financial resources for industrial development in Asian LDCs (ibid., para. 57), a training seminar on industrial project preparation and promotion for Asian LDCs was held at Bangkok, Thailand, in February 1993. Three more workshops on the same subject will be held in 1993 for French-speaking LDCs, English-speaking LDCs and countries in the South Pacific.

50. Notable UNIDO activities in African LDCs undertaken during the first quarter of 1993 include the continued progress in the programmes referred to in the Annual Report (ibid., paras. 59-60). Preparations continued for a workshop on privatization, policy, strategy and practice scheduled to be held at Dar-es-Salaam, United Republic of Tanzania, in June 1993. Projects approved thus far in 1993 for African LDCs include a regional cooperation programme to improve the productivity of existing small and medium enterprises, to strengthen the technical capacities of entrepreneurs in Madagascar in mobilizing financial resources and to follow up on the national investment forum for Madagascar scheduled for the third quarter of 1993; and a subregional programme to mobilize financial resources for the establishment and/or rehabilitation of small and medium enterprises.

51. In response to Conference resolution GC.4/Res.5, paragraph 2 (b) and Board decision IDB.10/Dec.12, paragraph (c), which call for attention to the industrial development in the Arab LDCs, work in those countries was characterized by preparatory activities for projects that would eventually support private sector development such as investment advisory services, privatization and one project financed under the Special Industrial Services programme to improve the performance of the cement industry in the region. A preparatory assistance project was also being carried out in Djibouti as was a TSS-1 (technical support services at the programme level) study in Sudan undertaken together with the International Labour Organisation (ILO). UNIDO also participated in inter-agency TSS-1 studies for Yemen that deal with the formulation of a programme for technical and vocational education as well as a national plan of action for environment.

52. In 1992 and 1993 the transition to the United Nations Development Programme (UNDP) successor arrangements characterized UNIDO activities in most LDCs in Asia and the Pacific. In that context, upstream activities and specific technical inputs by UNIDO staff to government-executed projects have become increasingly important in Bangladesh and Nepal and UNIDO revived technical cooperation activities in Lao People's Democratic Republic and Samoa. In addition, a regional project was launched to promote and develop agro-related metalworking industries in selected Asian and Pacific LDCs and the regional workshop on agro- and food-processing industries in Asia and Pacific LDCs in November 1992 (ibid., para. 61) resulted in concrete recommendations.

53. Working relationships were strengthened with UNDP, the World Bank, with counterparts in the United Nations Conference on Trade and Development, ILO, the International Telecommunication Union, the Food and Agriculture Organization of the United Nations and the United Nations Educational, Scientific and Cultural Organization as well as the Economic Commission for Africa and the Economic and Social Commission for Asia and the

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* The programme was also approved by the ministerial Symposium on the Industrialization of the Least Developed Countries held concurrently with the fourth session of the General Conference, November 1991 (PI/114).

Pacific in the implementation of the Paris Declaration and Programme of Action of the Second United Nations Conference on the Least Developed Countries and the industrial action programme for the least developed countries (see para. 47 above).

54. New projects approved for LDCs in the first quarter of 1993 amounted to $3.0 million (1991: $2.5 million) representing 19 projects and, for the same period, delivery reached a level of $144.4 million (1991: $157.3 million). In January, UNIDO participated in the eighteenth meeting of the Intergovernmental Commmission of Experts of the Preferential Trade Area for Eastern and Southern African States (PTA), the PTA Council of Ministers, the eleventh meeting of the PTA Authority and the tenth anniversary celebration of PTA, all held in Zambia. Country programme reviews were fielded to Madagascar and to Sierra Leone, where, in the latter, the status of the report of the industrial sector review and programming mission of 1991 was examined. During a mission to Guinea, the project document was formulated for the programme of assistance to rural women for the acquisition and management of small units for processing food products.

## VIII. TECHNICAL ASSISTANCE TO THE PALESTINIAN PEOPLE

55. The Industrial Development Board at its ninth session adopted decision IDB.9/Dec.6 on technical assistance to the Palestinian people in which it requested the Director-General to continue his efforts to implement General Conference resolutions GC.3/Res.13 and GC.4/Res.7 and to report to the Board at its eleventh session.

56. As reported in document IDB.9/10/Add.1 (para. 2), with the creation of a team consisting of the focal point, an economist and a research assistant, it has been possible to introduce a more systematic approach towards monitoring the development of the Palestinian industrial sector, taking into account studies and activities carried out in the past by UNIDO and others.

57. As reported in the Annual Report 1992, a project was approved under IDF ($49,000) to facilitate interaction with UNDP (IDB.11/10, chap. III, para. 86). The project is expected to enable UNIDO to complement and support the UNDP programme by providing technical services.

58. A training project for entrepreneurs of small industries was approved through a trust fund from Japan ($180,000). Preparatory activities thus far carried out include fielding the chief technical adviser to UNDP Jerusalem, the West Bank and Gaza Strip to prepare a tailor-made course to be held in Vienna, Austria, in collaboration with UNDP and to coordinate with the activities of the UNDP Business Development Centre project.

## IX. TECHNICAL ASSISTANCE TO THE SOUTH AFRICAN NATIONAL LIBERATION MOVEMENTS RECOGNIZED BY THE ORGANIZATION OF AFRICAN UNITY

59. UNIDO continued with its efforts in providing technical assistance to the South African liberation movements recognized by the Organization of African Unity. As reported to the General Conference at its fourth session, two projects of assistance to the African National Congress of South Africa (ANC) and to the Pan African Congress of Azania (PAC) were approved, both aimed at supporting and strengthening their respective repair and maintenance facilities in their refugee camps based in the United Republic of Tanzania (GC.4/29, para. 2).

60. The implementation of the project for technical assistance to PAC has proceeded as planned and is now in its final phase of completion. A primary aim of the project is to promote self-reliance among affiliates of PAC, thus helping to lessen the burden on host Governments and donor organizations. Within the framework of the project equipment has been supplied and installed and personnel trained both in practical and theoretical programmes. A recent tripartite meeting review considered the possibility of developing future programmes of assistance to PAC members returning home. Further consideration will be given to the matter taking into account the developments in the Republic of South Africa.

61. The ANC project could not be implemented owing to persisting uncertainty about the future of the ANC settlements in the United Republic of Tanzania.

## X. ECONOMIC AND TECHNICAL COOPERATION AMONG DEVELOPING COUNTRIES

62. In addition to updating and supplementing information provided in the Annual Report of UNIDO 1992 (IDB.11/10), the following text complies with Industrial Development Board decision IDB.9/Dec.8, which requested the Director-General to present to the Board at its eleventh session a progress report on the implementation of that decision.

63. The issues relating to the promotion of economic cooperation among developing countries continue to enjoy special attention in UNIDO. The mechanism is seen principally as a valuable instrument for promoting rational and efficient use of human, material, financial and technological resources available in developing countries for their individual and collective self-reliance. However, it is also noted that the potential of economic and technical cooperation (ECDC/TCDC) is only partially recognized and exploited. The effectiveness of industrial ECDC/TCDC activities depends on the support of Government authorities from the developing countries.

64. In its decision IDB.9/Dec.8, the Board requested the Director-General to continue efforts to programme a higher proportion of funds to ECDC/TCDC activities in the operational budget (para. (e)(i)) and to undertake specific negotiations with donors to the Industrial Development Fund (IDF) with a view to increasing the financing of ECDC/TCDC activities (para. (e)(ii)). The Organization has responded to both of those requests through IDF-financed projects and programmes. In particular, the response has been through large-scale, inter-country, multi-donor financed programmes such as the regional programme for industrial modernization of the capital goods sector in Latin America and the regional Africa hides and skins, leather and leather products improvement scheme, the second phase of which is being promoted in 1993. Funds from the UNIDO regular budget (Regular Programme of Technical Cooperation) are used in a complementary manner with IDF contributions to increase the impact of these projects and disseminate their benefits to a

larger number of countries. Under the general-purpose convertible segment of IDF, which is the only part of the operational budget funds that can be freely programmed by the Secretariat, UNIDO has concentrated on up-front, preparatory activities and preparatory assistance projects, many of which are directed toward promoting ECDC/TCDC or have an important ECDC/TCDC element. Of the 50 projects approved under the general-purpose convertible segment in 1992, 26 were regional, interregional or global, and many of the projects for which the IDF or medium-term plan priority was indicated do not fall directly under the ECDC/TCDC component but still have a significant impact in that field.*

65. With regard to the use of experts, services and equipment from developing countries (IDB.9/Dec.8, para. (e)(v), (vi), (vii)), efforts continue to be made to ensure the widest possible utilization of experts, services and equipment from developing countries in technical cooperation projects of UNIDO. Detailed information on the increased share of experts from developing countries including those employed as national professional project personnel is provided in the 1992 Annual Report (chap. V, para. 122, table 6; appendix D, tables 1 and 2).

66. In 1992 the Contracts Section awarded 82 contracts to consulting engineering organizations and institutions (private and public) in developing countries with a total value of $3.9 million. The Purchase Section placed 536 purchase orders with a total value of $5,078,000 with manufacturers and vendors in developing countries. The orders decreased by 138 ($2,012,000) or 25.7 per cent (39.6 per cent) as compared with 1991. The decrease is mainly attributable to the fact that developing countries are requesting increasingly more supplies of high technology equipment which, regrettably, is not yet manufactured by them.

67. In accordance with Board decision IDB.9/Dec.8, paragraph (e)(vi), (vii), all UNIDO Country Directors have been requested to send updated information from the countries they cover, for inclusion in the UNIDO roster of enterprises. The UNIDO vendors roster, revised in January 1992, in line with the new United Nations Common Coding System, indicates that at present 161 out of a total of 1,200 companies are registered from developing countries. The Permanent Missions of Governments that are members of UNIDO are regularly informed through the External Relations Division of all invitations to tender technical cost proposals and cost quotations issued both by the Contracts and Purchase Sections.

68. Supplementary to the activities reported on in the Annual Report are the following highlights of 1992: as a follow-up to the agricultural machinery meeting at Beijing, China (October 1991), UNIDO sponsored two Chinese experts to visit India and Indonesia and two experts to Egypt and the United Republic of Tanzania to conduct the technical studies for possible joint ventures in those countries. Three experts, sponsored by the Economic and Social Commission for Asia and the Pacific, visited Thailand to demonstrate Chinese-made agricultural machinery to recipient institutes. A Pakistani delegation visited China and signed a cooperation agreement for the joint production of agricultural machinery and implements in Pakistan. Brazil, Colombia and the Dominican Republic offered training and expertise to assist the start-up of an industrial free zone in Peru. Members of the Zimbabwe Women's Finance Trust visited Ghana, Senegal and Uganda to study women's credit and business organizations to promote small manufacturing enterprises, and to examine related training programmes. A feasibility study was carried out for setting up a textile mill in Bangladesh in cooperation with Turkey. The Secretary-General of the Islamic Chamber of Commerce visited UNIDO in March 1992 to identify areas for further strengthening cooperation between the two organizations.

69. In addition to the five ECDC-planned workshops to promote enterprise cooperation (IDB.11/10, chap. III, para. 27), some 20 workshops/meetings with an ECDC/TCDC component were held in 1992 by substantive branches in UNIDO, covering a wide range of technical fields, such as machine tools, man-made fibre, photovoltaic technology, petrochemicals, fisheries industry, medicinal and aromatic plant utilization, telecommunications equipment, information technology and shipbuilding. The gatherings were attended by experts, government officials and industrialists who had identified areas of cooperation among themselves in transfer of technology, sharing of expertise and training facilities.

70. While promotional activities serve the purpose of bringing potential partners from developing countries together, many supportive activities were aimed at facilitating cooperation at subregional, regional or interregional levels (IDB.11/10, chap. IV, para. 24). The ECDC/TCDC programme gave special attention to the development of regional and subregional programmes (decision IDB.9/Dec.8, para. (e)(iv)) in Africa, within the framework of ECDC/TCDC. A major activity was a demonstration programme on the use of indigenous biomass resources for meeting energy needs. The objective of this subprogramme is to validate the feasibility of converting agricultural waste into energy so as to promote its wide-spread utilization throughout the Preferential Trade Area for Eastern and Southern African States subregion, and to enhance the capabilities of the technical and maintenance personnel of the pilot demonstration programme. Other activities covered the development of prototype mobile seed dressing applicators suitable for African countries; the development of non-metallic resources in the Eastern and Southern African subregion; and the promotion of multinational industrial cooperation for the development and manufacture of transport equipment in Africa.

71. UNIDO provided support to the establishment of the African Iron and Steel Association (IDB.11/10, chap. III, para. 24) and contributed to the deliberations on its activities at the Association's first General Assembly held at Abuja, Nigeria, in November 1992.

72. Formal agreements on TCDC were discussed and implemented with Brazil. As a follow-up activity in 1992, a consultant was sent to Botswana,

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* For information on projects that were approved under the general-purpose convertible segment of IDF in 1992, see document PBC.9/CRP.1, pp. 21-23.

Lesotho and Zambia to identify cooperation with Brazilian institutions in human resource development. Similar arrangements on TCDC were also discussed with China and the Republic of Korea.

73. Regarding the request in Board decision IDB.9/Dec.8 (para. (e)(iii)) to maintain and enhance the actions described in IDB.9/10 (chap. IV, paras. 17-22), owing to financial and staff constraints, no solidarity meeting was held in 1992 as was foreseen in the programme and budgets. The possibility of organizing a solidarity meeting for the industrial development of Uganda is under review. As follow-up to the Guinea Solidarity Ministerial Meeting (December 1989), China provided vegetable-drying equipment to the Guinea Women Entrepreneurship Association, installed in 1992 with the help of four Chinese experts. Guinean project staff visited China to further discuss a tannery project. Three Ethiopian officials visited Egypt to negotiate further on projects discussed at the Ethiopia Solidarity Ministerial Meeting (November 1990). As follow-up to the Botswana Solidarity Meeting, two specialists from Botswana visited Turkey to further discuss the implementation of a leather project; the establishment of a porcelain technology centre was initiated with Cape Verde. A follow-up activity to the Cape Verde Solidarity Meeting (June 1988) was the study tour of a Cape Verdean specialist to Thailand to share experiences in pilot plant aquaculture.

74. The concept of ECDC/TCDC is reflected in the work of various sections of UNIDO, as reported in paragraph 29 of the Annual Report (chap. III). The Industrial and Technological Information Bank (INTIB) focal points network now covers over 70 developing countries in Africa, Asia and the Pacific and Latin America and the Caribbean. Key features of the INTIB networking system are the regular exchange of information in the areas of new products and production technologies, technology offers and requests, investment opportunities, joint venture opportunities, business information and training among the network members and its collaborators such as the Technological Information Pilot System, regional information centres and correspondents to enhance sustainable economic and technical cooperation among developing countries.

75. Promotion of ECDC/TCDC is seen as an integral part of the activities of three Divisions: the System of Consultations, Technology Development and Promotion and Industrial Operations Technology. Consultations meetings promote and strengthen the links between developing countries. Three Consultations that took place during 1992 were linked to ECDC/TCDC. They covered the following subsectors: fisheries, petrochemical and capital goods industries. Although substantive branches in the Industrial Investment Division and in the Department of Industrial Operations do not highlight the promotion of ECDC/TCDC as a major activity, staff backstopped many projects with an implicit ECDC/TCDC aspect and opportunities and networking arrangements on TCDC features are often built into technical cooperation programmes and projects. It is interesting to note that during the Nepal Investment Forum (December 1992), participants from developing countries accounted for about 55 per cent of the total investments negotiated at the forum; a similar percentage was also noted during the China Northwest Investment and Business Forum held in September 1992.

76. As part of a restructuring process, in July 1992 the ECDC Section was transferred from the Area Programmes Division to the Special Measures and Activities Division, with coordination, monitoring and promotion as its main functions. The staffing in the ECDC Section was reduced from five professional-level staff to two professionals by mid-1992.

## XI. INTEGRATION OF WOMEN IN INDUSTRIAL DEVELOPMENT

77. In its resolution GC.4/Res.12, the General Conference requested the Director-General, inter alia, to enhance the implementation of the UNIDO programme for the integration of women in industrial development 1990-1995 and in that context to undertake a number of measures and to report on the progress of the implementation of the resolution to the Conference at its fifth session through the Industrial Development Board. Accordingly, the following paragraphs provide a report of activities in line with the UNIDO programme and plan of action for the integration of women in industrial development 1990-1995 (GC.3/CRP.3), updating and supplementing the information provided in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III, paras. 30-37) on the subject.

78. Implementation of the programme and plan of action (GC.4/Res.12, paras. 4 (a) and 5) continued throughout the current biennium, 1992-1993, mainly with funding from Industrial Development Fund special-purpose contributions. The Governments of Germany, Netherlands and Norway strongly supported activities to mainstream women within UNIDO technical cooperation, study and research. Projects targeting women only were mainly supported through funding from the Governments of Austria and Switzerland as well as the UNIDO Regular Programme of Technical Cooperation and the programme of the Second Industrial Development Decade for Africa.

### A. Gender considerations in technical cooperation, study and research activities (GC.4/Res.12, para. 4 (b), (c), (e), (f))

79. In addition to the programming missions described in document IDB.11/10 (chap. III, para. 31), women-in-development experts were attached to a further six country programming missions (Burundi, Ghana, Niger, Republic of Korea, Sierra Leone and Togo) and to sectoral programming missions in priority areas such as industrial human resource development (Botswana and Yemen), the development of the small- and medium-scale industry sector (Cameroon, Ghana, Zambia and Zimbabwe) and to programming for the development of agro-industries in the least developed countries (LDCs) in Asia and the Pacific (Bangladesh, Bhutan and Yemen). In all the above cases, national experts or UNIDO staff assessed women's participation patterns, reviewed the constraints to their full participation and provided inputs into the missions' reports to ensure that women would be targeted in recommendations and follow-up.

80. Increasing attention was also paid to gender issues in the in-depth evaluation exercises. Two women-in-development experts participated in all three phases of the in-depth evaluation of UNIDO activities in the field of industrial human resource development. The evaluation, inter alia, concluded that equitable access to industrial

human resource development cannot be automatically assumed, but needs regular review and monitoring in order to ensure gender neutrality of policies and interests. Projects specifically targeting women were also evaluated. An evaluation was carried out of three country case studies (Nepal, Sri Lanka and Zimbabwe) on human resources in industrial development, focusing on the current and prospective contribution of women. A technical review was undertaken of a project in Kenya (assistance to jua kali women in the manufacture of textile and related products) that proved to be particularly successful in providing training to existing entrepreneurs, combining technical, managerial and entrepreneurial aspects of production. The technical review recommended its replication in other countries. From the point of view of small-scale industry, the projects in Kenya and Nepal were also provided with assistance in entrepreneurial and technology training to enhance product, design, range, quality and marketing outlets.

81. To incorporate a gender focus in study and research activities, a women-in-development expert from the Unit for the Integration of Women was assigned to the human resources group of the Regional and Country Studies Branch in order to strengthen the capacity of the Branch to incorporate gender issues into its activities. As a result, the methodology for reviewing industrial employment in the UNIDO industrial development review series was revised to embrace broader issues concerning human resource development and to include gender-specific data and information. Industrial development reviews on the former Czechoslovakia, Egypt, Hungary, Indonesia, Lithuania, and Mexico now contain such information. Gender issues were considered (IDB.11/10, chap. III, para. 31) in a study on micro-enterprises and rural development in Mexico. A study was also undertaken of the changing techno-economic environment in the textile and clothing industry, with implications for the role of women in Asian developing countries.

82. A global typology study was carried out on women's participation in the manufacturing sector - patterns, determinants and future trends. The study examines trends and patterns in women's participation in the area of manufacturing, from a global perspective. Countries with similar patterns of women's participation in manufacturing are grouped together for the purpose of analysing the contribution women make to the manufacturing sector of the respective countries, the major socio-economic determinants of their participation and - within the context of the regional groupings - the anticipated direction of their future involvement. The methodology used in the study is an adapted version of the UNIDO industrial sector typology developed within the framework of an integrated programme approach to industrial development. The study confirmed the important role women play in the economy, across most countries analysed and in all sectors of economic activity considered. It even suggests that essentially all major patterns of economic development have, to a striking extent, relied on an enhanced participation of women in the labour force. At the same time, it reveals that both the rates and the specific patterns of women's participation in the economy in general, and in individual economic sectors, vary considerably with the influence of processes of economic and socio-cultural change.

B. Activities specifically targeting women
(GC.4/Res.12, para. 4 (d), (h))

83. In the area of training, emphasis has been on strengthening the entrepreneurial capabilities of women. The UNIDO training programme for women entrepreneurs in the food-processing industry has been widely disseminated and, in addition to being introduced with UNIDO assistance to Gambia, the United Republic of Tanzania and to countries in Central America (ibid., para. 33), its introduction is under formulation in Cambodia, Laos, Malawi and Viet Nam. The training manual was translated into French and is now available. A training programme was developed to promote women's participation in the modernization process in China, and a preparatory assistance project was initiated to provide technical and managerial skills development for women in the garment-making industry in four countries of the Association of South-East Asian Nations. A seminar on the role of savings and credit for development and entrepreneurship of women in the Central African Customs and Economic Union (UDEAC) countries was organized by UNIDO. Efforts continued to be undertaken to promote the participation of women in decision-making. A workshop on women's participation in industrial policy and decision-making in Asia and the Pacific was held at Kathmandu, Nepal (March/April 1993), in cooperation with the International Federation of Business and Professional Women.

84. In all training programmes organized by UNIDO special efforts were undertaken to increase the number of women participants. One particularly successful case is a training programme on industrial project preparation and appraisal which took place in 1992 in India where 50 per cent of the participants were women.

85. Projects geared to the development and transfer of appropriate technologies for rural women fall mainly in the areas of food processing, the introduction of energy saving and environmentally-sound technology (ibid., para. 33). Those projects include fruit and vegetable drying in Burkina Faso, Guinea, Mali and Senegal, using solar energy; gari processing in Nigeria; development and dissemination of appropriate cereal-processing equipment for rural women in sub-Saharan Africa; shea butter production in Guinea; and upgrading of salt production through the introduction of solar evaporation techniques in Guinea. Efforts are also under way to make available to women appropriate biotechnologies with a positive environmental impact, such as seaweed production and shrimp waste recycling. The projects are in line with General Assembly resolution 47/174 (December 1992) which urges organizations and bodies of the United Nations system to take into account the goals of the Geneva Declaration for Rural Women adopted by the Summit on the Economic Advancement of Rural Women.

C. Supporting activities
(GC.4/Res.12, paras. 4 (g) and 6)

86. Workshops for UNIDO Headquarters and field staff were organized to familiarize staff with gender issues and with the guidelines and other tools developed to facilitate the consideration of women in their activities. To ensure the consideration of gender issues throughout the workshops, a staff member from the Unit for the Integration of Women in Industrial Development

participated in a workshop in December 1992 on objectives-oriented project planning held in Bangladesh and in a regional workshop in Nepal on identification, design, appraisal, monitoring and evaluation of technical assistance projects for LDCs in Asia.

87. The database on women in industry was strengthened further, both in bibliographical collection and in country information notes to facilitate the consideration of gender aspects in programme/project design. At present, the database contains information notes on women in industry for about 100 developing countries. Upon request, the information is also distributed to Governments and non-governmental organizations (NGOs).

88. Cooperation and coordination with other organizations in the United Nations system continued to be ensured (IDB.11/10, chap. III, para. 36) through active participation in three inter-agency meetings on women and in recent expert group meetings, seminars and workshops organized by United Nations agencies including the Economic and Social Commission for Asia and the Pacific, the Food and Agriculture Organization of the United Nations, the International Fund for Agricultural Development, the International Research and Training Institute for the Advancement of Women, the United Nations Department for Economic and Social Development and the United Nations Educational, Scientific and Cultural Organization. UNIDO also participated in the ad hoc United Nations and financial institutions working group on women, environment and development in preparation for the United Nations Conference on Environment and Development and the follow-up to it. Cooperation with NGOs continued to expand (ibid., para. 37), the most recent example being the Asian Alliance of Appropriate Technology Practitioners (Approtech Asia).

### D. Assessment

89. With the implementation of the UNIDO programme for the integration of women in industrial development 1990-1995 now at the halfway stage, it is evident that its objectives and strategies as outlined in 1989 are still valid. The development of instruments for institutionalizing gender considerations in the Organization's activities was an important step. A reference file on the consideration of women in project design, management and evaluation and a draft guide on the consideration of women in indicative integrated development programmes are practical tools that enable programme/project designers and implementers to give consideration to women throughout the programme/project cycle. Adjustments were made recently to the reference file to facilitate its application in objectives-oriented project planning, an approach UNIDO is adopting increasingly. The evaluation and technical reviews of on-going activities and completed projects have provided valuable guidance for future directions. The in-depth evaluation of UNIDO activities in the field of industrial human resource development in particular drew attention to existing gender imbalances in education, training and employment and emphasized that equitable access by women and men to industrial human resource development cannot be automatically assumed. For those reasons, formal procedures for institutionalizing gender considerations in programme/project design are needed which are then monitored during the appraisal process, calling for staff training in gender analysis. A training programme with that aim is under preparation.

90. In assessing the typology study referred to in paragraph 6 above, it may be noted that increases in women's paid manufacturing employment have been accompanied by improvements in social, educational and demographic factors. Countries with the largest numbers of women participating in the modern sector show by far the most favourable picture in terms of social indicators such as reduced fertility, illiteracy rates and improved life expectancy. In cooperation with the regional economic commissions, regional typology studies will be undertaken to deal with the following: a detailed review of socio-economic constraints affecting women's participation in economic development; an identification of new and emerging skill requirements likely to result from anticipated development patterns; and proposals for specific strategies that may be required to permit women to participate in economic development on an equal footing with men. The structured information and data resulting from the study could contribute to the development of coordinated strategies within each region for promoting women's contribution to industrial development and to the creation of a systematic comparative database on women in industry. This will constitute a valuable input to each region's preparations for the Fourth World Conference on Women to be held at Beijing, China, in September 1995.

91. Greater gender equality is important in promoting sustainable development of the industrial sector because men and women are involved in different ways in industrial production and consumption patterns and have unequal access to and control over resources and decision-making. Principle 20 of the preamble of the Rio Declaration on Environment and Development states that the full participation of women is essential to achieving sustainable overall development. Agenda 21 also states that greater gender equality is an essential factor for achieving sustainable development and is critical to its successful implementation (chap. 24, global action for women towards sustainable and equitable development). The integration of women in industrial development is a common theme in the proposed medium-term plan, 1994-1999 (IDB.10/5) and UNIDO considers the theme to be an important element of its response to Agenda 21 (IDB.10/32).

92. Women and industrialization is one of the issues to be covered by the Fourth World Conference on Women to be convened within the framework of promoting the implementation of the Nairobi Forward-looking Strategies to the year 2000 (see para. 90 above). UNIDO as a specialized agency is urged through General Assembly resolution 47/95 to contribute to the preparation of that Conference. Those preparations have begun, with UNIDO's participation in them. Specialized expertise and adequate resources will continue to be required for mainstreaming gender concerns in the Organization's operational and research activities as well as in formulating and implementing special projects/programmes and policies for women - a necessary element towards achieving greater gender equality. Training in gender analysis will also need to be intensified within the Secretariat and will need to be extended to UNIDO counterparts in the field.

## XII. UNIDO ENVIRONMENT PROGRAMME, INCLUDING FOLLOW-UP TO THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

93. The Industrial Development Board, in its decision IDB.10/Dec.13, paragraphs (g) and (n) requested the Director-General to again update the UNIDO environment programme (IDB.10/17) in the light of further developments related to Agenda 21, and to make a progress report to the eleventh session of the Industrial Development Board on UNIDO activities on sustainable development and its implementation of Agenda 21, and subsequently to the General Conference at its fifth regular session.

94. The original UNIDO environment programme (IDB.6/3) had been updated in September 1992 (IDB.10/17) as requested in General Conference resolution GC.4/Res.18, based on the recommendations and guidelines of the United Nations Conference on Environment and Development (UNCED), the views expressed by the General Conference at its fourth session and the results of recommendations of the UNIDO 1991 Conference on Ecologically Sustainable Industrial Development (ESID). At UNCED, the conclusions of the ESID Conference were the UNIDO inputs on sustainable development in industry (chap. 30 of Agenda 21). With the incorporation of ESID into the UNIDO environment programme, it has de facto become the framework for integrating ecologically sustainable industrial development, or ESID, throughout the Organization. Thus, by combining environment and sustainable development into a coherent whole, the UNIDO environment programme as represented in document IDB.10/17 is, in all but name, the ESID programme of UNIDO.

95. The following text reports briefly on some sustainable development activities recommended for implementation in Agenda 21, and which have taken place since the last report. Other activities are described in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. III, paras. 13-21, and other parts of the Report).

### A. Activities relating to implementation of Agenda 21

96. As requested in paragraph (k) of Board decision IDB.10/Dec.13, UNIDO continued its promotion of ecologically sustainable industrial development with the undertaking of numerous activities in the areas of, inter alia, technical cooperation, training, capacity building, information dissemination and investment promotion.

97. Projects aimed at formulating or introducing ESID strategies have been developed for financing from technical support services at the programme level (TSS-1), the Industrial Development Fund (IDF) and the United Nations Development Programme (UNDP). Several TSS-1 projects on pollution control and related topics are under implementation in countries such as India, Thailand and Yemen. The methodology for formulating ESID strategies, to be used by UNIDO staff and consultants as well as by policy makers in recipient countries, has been finalized and issued as a working paper. In other areas, such as the UNIDO 1993 Guide to Training Opportunities for Industrial Development (PI/115), elements are being introduced on pollution control and environment protection in five subsectors. A self-learning series designed for UNIDO Headquarters, field staff and UNIDO counterparts in developing countries was finalized in May. It provides a thorough but selective background on environment and sustainable development issues as they relate to industry, and introduces elements of ESID through a series of films, computer-aided diskette work and manuals.

98. The environment and energy information system seeks to test the establishment of sustainable, cost-effective mechanisms for the management of industrial environment information targeted to small- and medium-sized industries within developing countries. Studies were completed for four countries (Hungary, Peru, Thailand and Zimbabwe). In March 1993, the Hungarian Small Business Administration became the first participating organization to agree to test that approach to information networking for small- and medium-sized industries.

99. With reference to the need to promote the capacity of developing countries to produce environmentally sound technologies (decision IDB.10/Dec.13, para. (h)(iii)) in the area of new and renewable energy - which helps to reduce carbon dioxide and global warming - the application of solar energy technology has continued to progress. A proposal is under discussion to establish a centre on the application of solar energy in Australia for the benefit of developing countries (see para. 146 below). Developments in hydrogen energy are also being monitored by UNIDO and a feasibility study is being prepared on the establishment of an international centre for hydrogen energy in Turkey. Subsequent to a meeting of the Regional Network for Small Hydropower (Asia and the Pacific) held in late 1992, a decision was taken to promote the expansion of that network to an international scale.

100. Projects have been approved or are under preparation to assist in technology transfer (decision IDB.10/Dec.13, paras. (h)(i), (ii)) and start-up of local manufacture of wind turbines for Indonesia (small-scale application) and, at the subregional level, in Latin America (small- and large-scale application). A project to assist in strengthening local manufacturing capabilities for solar, wind and biomass application in the Democratic People's Republic of Korea has been requested and formulated. A feasibility study on an investment project for technology transfer and the local production of large-scale wind turbines is under preparation in the Philippines. In the area of small-scale hydropower, two proposals were elaborated for Madagascar and are under consideration for financing. The projects are envisaged to provide electricity to people in rural areas not connected to existing national grids. In the Syrian Arab Republic a project was designed for technology transfer and the local manufacture of mechanical wind pumps for pumping water for drinking purposes and livestock breeding. A project to development rural/renewable energy systems is under preparation for Bangladesh. An expert group meeting to be held in Indonesia in July 1993 will deal with the application of solar energy (solar thermal and photovoltaics) with special emphasis to promote local manufacturing capabilities (see also chap. I, Activities in the field of energy, paras. 10, 13).

101. Recycling of wastes and utilization of by-products is an increasingly important activity

in the Industrial Operations Technology Division. It highlights the link between the environmental and economic aspects of cleaner production. Industries in which projects have been undertaken recently include plastics, metal, paper, waste oil and glass. Effective technology transfer is a vital aspect of achieving ESID, and UNIDO assists developing countries in choosing the relevant technology to reach optimum environmentally-friendly operations with a minimum additional investment. Increased awareness of environmental issues is also part of these projects, which include plant-level training programmes, seminars and workshops, as well as attention to research and development. Assistance is also being given in the design and operation of waste water treatment facilities, and training is being provided in the improvement of existing pilot plant water pollution control facilities. Plans are also being developed for the effective control of industrial discharges to sewers. Under a project to demonstrate cleaner production techniques in the cement industry, a workshop and a seminar were conducted in March 1993.

102. High-level advisory services are being offered in the relocation of polluting industries, particularly in the sectors of metal treatment (electroplating) and textile dyeing and finishing. Measures aim at improving the efficiency of those industries and simultaneously reducing pollution through recycling and waste water treatment. As regards pesticides, activities include the extension (phase 4) of the Regional Network on Pesticides for Asia and the Pacific (RENPAP), the setting up of a network to develop seed dressing technology in Africa, reduction of hazardous wastes, development of non-toxic insecticides and reduction of the overall volume of pesticides used per unit area in agriculture, as well as encouragement of biopesticide use.

103. In the context of ozone depletion and the role of UNIDO as an implementing agency of the Multilateral Fund for the Implementation of the Montreal Protocol (see para. 108 below), UNIDO is involved in a project aimed at facilitating the preparation of project documents and proposals. Projects under preparation relate mainly to the transfer of chloro-fluorocarbon-free technologies to industrial enterprises in the refrigerants, foams, solvents and other manufacturing subsectors.

104. Environmental impacts of the construction industry was a major topic at a Consultation held jointly with the United Nations Centre for Human Settlements (Habitat) from 3 to 7 May 1993 in Tunisia (IDB.11/10, chap. IV, para. 43). One of two main documents under preparation for the planned Consultation on downstream petrochemical industries (November 1993) will focus on assessment of wastes and pollutants generated in these manufacturing processes. In preparation for a Consultation on environmental management and cleaner production technologies in the metallurgical industry (ibid., para. 45) to be held in 1995, environment committees have already been set up in Latin America and the Caribbean.

### B. UNIDO's role in system-wide follow-up to UNCED

105. As requested by the Board in paragraph (k) of decision IDB.10/Dec.13, UNIDO is becoming fully involved in the system-wide follow-up to UNCED. In October 1992 the Administrative Committee on Coordination established the Inter-agency Committee on Sustainable Development (IACSD) as its functional committee on sustainable development issues. With its resolution 47/191 of 29 January 1993, the United Nations General Assembly established the Commission on Sustainable Development (CSD) as the intergovernmental body to follow up implementation of the decisions and recommendations of UNCED, including Agenda 21. On 1 February 1993 a Chairman was appointed for IACSD, and a meeting was scheduled for 14 to 25 June 1993 to prepare for the first substantive CSD session.

106. Although not a member of the IACSD core group of nine agencies, UNIDO participated actively in the first meeting of IACSD, and subsequently contributed towards preparation of substantive documentation for CSD. In that connection it drew on its earlier analysis (IDB.10/32) of the critical role industry must play in the implementation of Agenda 21 by alleviating poverty through economic growth and ecologically sustainable industrial development.

107. Agencies are increasing their cooperation in implementing Agenda 21. At UNCED the lead role for capacity building was assigned to UNDP, which responded by launching its Capacity 21 initiative. Capacity 21 emphasizes national programmes, national execution and the use of expertise from the United Nations system. UNIDO is an active partner, working closely with other agencies, to help UNDP shape the Capacity 21 programme. Three thrust areas are of particular relevance to the work of UNIDO, and they have been conveyed to UNDP as models from which individual programmes can be developed. Targeted at the government, institution and enterprise levels, the three areas are:
(a) national capacity building for the formulation and implementation of ESID strategies;
(b) building the capacity to analyse and exercise choices among technological options; and
(c) building capacity for applying technological options.

### C. Implementation of international agreements and conventions

108. In accordance with paragraph (l) of decision IDB.10/Dec.13, UNIDO is currently engaged in assisting developing countries in their implementation of international environmental agreements and conventions where they relate to industry, and in paragraph (m) of the same decision, the Director-General was requested to seek access to all available resources in support of ESID. In November 1992 UNIDO secured its status as the fourth implementing agency for the Multilateral Fund for the Implementation of the Montreal Protocol, thus enabling the Organization to engage itself more fully in global efforts to protect the ozone layer. UNIDO, in a very short period, prepared and presented proposals for a work programme for 1993 in which five government requests were submitted by Brazil, China, Egypt, the Islamic Republic of Iran and the Syrian Arab Republic to prepare and formulate projects for phasing out ozone-depleting substances. With an allocation of $500,000, projects are being prepared for submission to the eleventh session of the Executive Committee of the Multilateral Fund in June. In that connection, an agreement related to the 1993 work programme was reached with the World Bank in which the Bank acknowledges UNIDO's wide experience with small-scale industrial projects as

complementary to the Bank's experience with large-scale projects. The Bank is also actively considering the possibility of transferring a large part of its activities in Nigeria to UNIDO. Joint missions with the World Bank have been carried out in China, India and Thailand where UNIDO identified and formulated a significant number of projects to be undertaken in full cooperation with the World Bank. Moreover UNIDO was invited, along with the other implementing agencies, to submit to the Multilateral Fund a three-year programme for the period 1994 to 1996. The UNIDO programme, consisting of proposals amounting to approximately $70 million, was supported by the Multilateral Fund secretariat during an inter-agency meeting at which UNDP also proposed a programme for $70 million, the World Bank for $450 million and the United Nations Environment Programme (UNEP) for $14 million. This called for UNIDO to strengthen and organize major core technical staff to respond to this challenging programme.

109. Regarding the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, UNIDO participated in the First Meeting of the Contracting Parties held in Uruguay in late 1992 and pledged UNIDO support to developing country signatories. Since September 1992, UNIDO staff have been assisting the interim secretariat of the Basel Convention in elaborating technical guidelines. As more countries ratify the Convention, UNIDO expects to increase its assistance to developing countries to minimize the generation of waste, including hazardous waste.

110. Two Conventions were opened for signature at UNCED: the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity. As far as the Framework Convention on Climate Change is concerned, ongoing work of UNIDO in the areas of energy conservation and energy efficiency, as well as development and promotion of new and renewable sources of energy, continue to be pursued as cost-effective options for developing countries to limit carbon dioxide emissions. Regarding the Convention on Biological Diversity, UNIDO's continued interest in and contribution to the promotion of biotechnology and genetic engineering in developing countries give the Organization a role and opportunity for assisting those countries to achieve some of the objectives on conservation and sustainable use of biodiversity which are also reflected in Agenda 21. Since UNCED, UNIDO has continued to participate in meetings led by UNEP of the interim secretariat of the Convention on Biological Diversity, pending the coming into force of that Convention.

111. Participants at UNCED recognized the need to ensure environmentally sound management of toxic chemicals and identified six programme areas for intensive international work. The Conference recommended the International Programme on Chemical Safety (IPCS), executed by UNEP, the World Health Organization and the International Labour Organisation, to be the nucleus for international cooperation and coordination within the United Nations system. Although UNIDO was not then a part of IPCS, its participation at several meetings led to recognition of the importance of UNIDO in that field as demonstrated by the large number of UNIDO projects related to chemical safety and chemical waste management. Therefore, in 1993 UNIDO was invited to participate in the Intersecretariat Coordination Committee to discuss proposals for a strengthened IPCS. A revised memorandum of understanding is being drafted by IPCS for consideration by UNIDO that would allow full participation of the Organization in response to chapters 19 to 22 of Agenda 21 related to toxic chemicals and chemical waste management.

112. UNIDO also actively participates in workshops organized by UNEP/Food and Agriculture Organization of the United Nations on prior informed consent for banned or severely restricted compounds, another important aspect of the control of toxic/hazardous chemicals.

## XIII. SYSTEM OF CONSULTATIONS

113. The Industrial Development Board in its decision IDB.9/Dec.9 requested the Director-General to carry out a number of specific measures designed to enhance the efficiency and effectiveness of the System of Consultations. The decision also requested that negotiations be initiated with interested Member States to host the approved Consultations followed by investment promotion meetings, as appropriate. In addition to the information provided in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. IV.B), the present document reports on action taken in the implementation of that decision.

### A. Duration of meetings and participation

114. The Board requested the Director-General to reduce the average length of Consultation meetings to less than five days. Following that decision the Regional Consultation on the Petrochemical Industry in the Arab Countries was held at Innsbruck, Austria, for four days from 22 to 25 June 1992. The duration of the Regional Consultation on the Restructuring of the Capital Goods Industry in Latin America and the Caribbean, Caracas, Venezuela, was from 9 to 12 November 1992, during which three full days were spent on discussions; moreover, time was allowed for presentation of UNIDO's technical cooperation and investment promotion programmes. One of the purposes of shortening the duration of the Consultations was to encourage industrialists to attend them, and the experience of the two Consultations has indeed fostered wider participation of industrial partners.

115. Special efforts, therefore, continue to be made to ensure active participation of industrial partners at Consultation meetings. The success of those endeavours was evident at the Regional Consultation on the Petrochemical Industry in the Arab Countries where two thirds of the participants came from public and private industry. After the Regional Consultation on the Restructuring of the Capital Goods Industry in Latin America and the Caribbean, the recommendations were presented to and discussed by industrialists at the meeting of the VII Jornadas Venezolanas de Bienes de Capital. In a further attempt to attract greater participation by industrialists, the First Consultation on the Construction Industry, convened at Tunis, Tunisia, 3 to 7 May 1993, was held simultaneously with an international trade fair on this sector. On 5 May, the day was made available for investment promotion.

B. Possibility of combining Consultations with investment promotion meetings

116. Notwithstanding the inherent differences in the objectives and modalities of the operations of industrial investment programmes and the System of Consultations, efforts are being made continuously to combine industrial investment promotion activities with Consultations. Whereas investment promotion operates at the project level, i.e. presenting individual project proposals to potential investment partners, the System of Consultations works at the sectoral policy level, considering the issues from an economic, financial, technical and social point of view. However, close cooperation between the two programmes continues and the modalities for some integration are being studied. Participants at Consultations receive an aide-mémoire with a form to prepare requests or offers for investment projects, and officers from the Industrial Investment Division have the opportunity to initiate discussions and negotiations with those participants making such offers or requests. A new concept was applied at the First Consultation on the Construction Industry by devoting an entire day to investment promotion activities with a focus on the construction industry, a sector which offers many investment opportunities.

C. Greater synergy with other units of UNIDO

117. The Advisory Committees for the Consultations, which were set up as a result of a recommendation emanating from the evaluation of the System of Consultations (cf. IDB.8/22, para. 12), are the key instruments for coordinating the activities of Consultations within the Secretariat. An important aspect of that coordination is reflected in the background documentation which is prepared by all those engaged in a particular sector. The Advisory Committees are particularly active in the preparation of documentation and in the elaboration of plans for follow-up action on recommendations reached at Consultations. Furthermore, members of the Advisory Committees regularly participate in Consultations and contribute to the proceedings of the meetings.

118. Other forms of cooperation with many units of the Secretariat also continue. For example, representatives of the Area Programmes Division, Industrial Investment Division, Technology Development and Promotion Division and the relevant Divisions of the Department of Industrial Operations brief participants at Consultations on their respective activities, thus taking advantage of the meeting to follow up on their ongoing and pipeline projects, and in many cases to initiate new technical cooperation projects.

119. Of particular note has been the close collaboration with the Metallurgical Industries Branch in the iron and steel sector which, in conjunction with regional associations in Latin America and the Caribbean and Asia and the Pacific, has greatly contributed to shaping the UNIDO environment programme in that sector. Close cooperation of the Institutional Infrastructure Branch and the Latin America and Caribbean Programme at the Regional Consultation on the Restructuring of the Capital Goods Industry in Latin America and the Caribbean can also be cited in addition to cooperation on environmental management/cleaner technologies in the metallurgical industry. Also with regard to environment, there has been close cooperation with the Environment Coordination Unit, particularly in the preparation for the Consultation on downstream petrochemical industries to be held at Teheran, Islamic Republic of Iran, in November 1993. An increasing degree of interaction and cooperation with other specialized agencies and organizations in the United Nations system has taken place (see IDB.11/10, chap. IV, para. 36).

D. Panels

120. The Leather and Leather Products Industry Panel has continued to operate, thanks to the availability of funds, as a notable example of integrated technical cooperation of UNIDO in that sector. Although intensive efforts have been taken towards the creation of similar panels for other sectors, such as sugar and aluminium, no financing has so far been secured for their establishment despite the fact that project proposals have been submitted for the consideration of the donors.

E. Mobilization of funds for technical cooperation activities emanating from Consultations

121. As reflected in paragraph (e) of Board decision IDB.9/Dec.9, an important aspect of the potential for the integration of the activities of the System of Consultations within the Secretariat centres around the implementation of the plans of action for technical cooperation activities. These plans are based on the recommendations of each Consultation consisting of guidelines for initiation of programmes and projects in the sector concerned indicating the lead unit responsible for preparing projects and their subsequent submission for financing. The process of identifying sources of funds has been pursued and project proposals developed by the relevant Departments.

F. Negotiations for hosting approved Consultations

122. In order to ensure maximum benefit from Consultations to participants from developing countries, particular efforts are made in selecting the most appropriate counterparts and regional organizations in those countries. Discussions have already been held with interested partners in Latin America for convening the Consultation on downstream petrochemical industries for Latin America and the Caribbean in the 1994-1995 biennium. Contacts have also been made in that region concerning the holding of the Consultation on environmental management/cleaner technologies in the metallurgical industry. Potential hosts in North Africa have been approached for the regional Consultation on the iron and steel industry in Africa. The possibility of hosting the regional Consultation on the leather and leather products industry in Asia is also being explored.

123. The efficiency of the process of Consultations would be greatly improved, especially for regional Consultations, if they could be held in the respective regions. This would be particularly beneficial to representatives from developing countries who do not have the wherewithal to travel long distances to Vienna, where a growing number of regional Consultations are being held as a result of the provisions in paragraph 18 of the

rules of procedure for the System of Consultations (PI/84) and the financial difficulties faced by Governments of developing countries in complying with these provisions. Flexibility in the application of paragraph 18 of the rules of procedure would thus be advantageous to enable the convening of Consultations in developing countries.

## XIV. DEVELOPMENT AND TRANSFER OF TECHNOLOGY

124. The General Conference in its resolution GC.4/Res.13 requested the Director-General to undertake a number of actions aimed at promoting and facilitating the development and transfer of technology for developing countries and to report to the Conference at its fifth session through the Board at its eleventh session on the implementation of the resolution. Subsequently, the Board in its decision IDB.9/Dec.10 addressed additional requests to the Director-General on the subject including also the submission of a report to its eleventh session. Resolution GC.4/Res.13 and decision IDB.9/Dec.10 expressed the concerns of Member States in a number of related areas, including the necessity of accelerating and enhancing programmes of development and transfer of technology. Those concerns are consolidated in the present document under four broad themes: technology flows and technology transfer issues; technology assimilation and adaptation; technology appropriate to sustainable development; and technology growth areas, including contributions to regional and subregional endeavours. In compliance with the request of the Board in decision IDB.9/Dec.10 (para. (v)) a comprehensive list is also given on technologies adapted, promoted and developed by UNIDO (see annex). The present progress report covers the period from May 1992 until March 1993, thus supplementing and updating the information provided in the Annual Report of UNIDO, 1992 under the programmes related to industrial technology development and promotion (IDB.11/10, chap. IV, paras. 61-97).

125. The UNIDO-wide programme described in document IDB.3/26 continues to be the basis for current proposals for the 1994-1995 programme and budgets. Nevertheless it has been necessary, taking into account resource constraints, to focus increasingly on priority areas based on perceived needs and requests of developing countries.

### A. Technology flows and technology transfer issues

126. In compliance with resolution GC.4/Res.13 (para. 3 (f)), a programme of studies sensitizing Governments and industry on global trends in technology continued with the commissioning of three proposed publications in the Technology Trends series on: trends in East and West Europe having an impact on technology transfer to and development in developing countries; management of technological change in the context of operations of transnational corporations (TNCs) and national companies in developing countries; and trends in the location of TNCs' corporate research and development in East European and developing countries. Also with a view to managing technological change, technology monitoring activities are to be increased with the design of a biennial global technology review based on contributions by specialist monitoring groups in developing countries. The review's technical cooperation among developing countries (TCDC) approach exploits the considerable scope for action in that respect and will be contingent on the availability of resources. National and regional capacity for technology monitoring will also be strengthened in order to help developing countries keep abreast with changing technology trends at the global level and to take decisions based on their assessments.

127. Technology trends are also monitored through the continuing publication of four quarterly technology monitors and through the information referral activities of the Industrial and Technological Information Bank (INTIB). Responding to Board decision (IDB.9/Dec.10, para. (d) (iv)), INTIB continues to strengthen national focal points for technological and industrial information, and to transfer to them the task of supplying and accessing such information. INTIB is also the main source for active promotion of technology flows through the series of TECHMARTS. Organized as a means to both systematize the information on technologies available for transfer and to promote conclusion of preliminary technology transfer agreements, TECHMARTS bring sellers and buyers of technology, entrepreneurs, managers and technology acquisition specialists together in a particular country or subregion to discuss and negotiate technology transfer and cooperation. Their basis is a technology compendium prepared and circulated in advance describing several hundreds of technologies, many of them in the context of technology transfer opportunities, sought or offered by interested parties and identified through UNIDO technology information services. Through TECHMARTS, therefore, INTIB becomes a vehicle for technology transfer. Several requests from potential host countries are pending; TECHMARTS are already being planned for Brazil, Mexico and Tunisia. Other INTIB activities in 1992 are reported on in the Annual Report of UNIDO, 1992 (ibid., paras. 65-68).

128. With regard to efforts made to facilitate the development and transfer of technology, with emphasis on technology acquisition and its implementation aspects (GC.4/Res.13, para. 3 (b)), UNIDO assists in improving developing countries' capability to negotiate and acquire technology on the best possible terms through its programme on technology acquisition and negotiation. The development of those activities is being initiated using extrabudgetary funds. At the national and regional level they sensitize policy- and decision-makers, and provide negotiators with information, tools and training to facilitate their tasks. One new tool under development is an expert system on contract drafting and negotiation (ibid., para. 94), designed to improve the speed and the effectiveness of negotiations. The system will select appropriate contract options within a set of types and structures of agreements and a set of clauses according to national requirements, the industry concerned and other factors. It will generate interactive contract drafts to orient subsequent negotiation. A new professionally designed and executed training programme is supported by a comprehensive set of teaching materials now being consolidated into a UNIDO manual on technology transfer negotiations, with inputs from the Licensing Executives Society (ibid.). Another publication, a set of guidelines for the development, contracting and negotiation of build-operate-transfer (BOT) projects, focuses on an alternative technology transfer arrangement (ibid.). The Guidelines will: (a) provide a

strategic orientation to assist developing countries introduce, promote and implement BOT strategy and projects; (b) provide practical information on the structure, procedures and basic issues of BOT arrangements; and (c) reduce the time and expense of BOT bidding, negotiation and contracting through preparation of standard procedures and model documentation.

129. Other studies and analytical assessments include intellectual property protection and technology transfer in the field of biotechnology, the increasing role of strategic partnering, access by developing countries to environmentally sound technologies, the international environment for technology transfer and the changing role of institutions (resolution GC.4/Res.13, para. 3 (d)).

130. The collaboration of donor countries to develop transfer of technology that would benefit national production and export capacity was exemplified by eight IDF donors during 1992, several of them developing countries (GC.4/Res.13, para. 3 (e)). As a result, high-level advice on the textile industry and the rehabilitation of the metallurgical industry was made available to the Preferential Trade Area for Eastern and Southern African States subregion. Africa also benefited from: a regional hides, skins, leather and leather products improvement scheme; the rehabilitation of industrial enterprises in East Africa; assistance in water pollution control and biodiversity; and the establishment of a non-metallic minerals laboratory for Eastern and Southern Africa. Through similar collaboration with donor countries, individual Asian countries were supported in the modernization of the wine and spirits industry; techno-economic aspects of the sugar industry; energy-saving and environmental technologies (including elimination of mercury pollution from gold recovery operations, and oxygen pulping and bleaching); and development of agro-industry. Donor interest in Latin America is highlighted by the regional programme for industrial modernization of the capital goods sector. This multi-donor project enhances that sector's export competitiveness with technologies for improved product design and development of new products, and for incorporating advanced control systems into existing equipment. Efforts will continue in order to maintain the interest of donor countries.

131. The promotion of enterprise-to-enterprise cooperation (decision IDB.9/Dec.10, para. (d)(ii)) continues to feature significantly in the Organization's industrial investment work. Although difficult to quantify, transfer of embodied technology (such as technical information and machinery) and unembodied technology (patents, copyrights) was a major factor in many of the 194 investment projects concluded in 1992 (cf. IDB.11/10, chap. I, para. 27). Such cooperation was also promoted with profiles on the series, How to Start Manufacturing Industries in the field of agro-food production and wood processing. In addition, an ongoing programme of South-South enterprise-to-enterprise cooperation featured negotiations between small- and medium-sized engineering enterprises in India and counterparts planned in Egypt, Malawi and the Philippines. Some 18 agreements were concluded, paving the way for technology transfers, joint ventures and training. The programme is currently being extended to Bangladesh and Indonesia.

132. Under the UNIDO technology development and promotion programme enterprise-to-enterprise cooperation is promoted with respect to specific cases that arise from within other technology promotion activities, for example, in advanced technological areas such as biotechnology and informatics. Cooperation will also be promoted between enterprises in the context of economic cooperation among developing countries (ECDC), for instance in the Bolivar Programme for Latin America. Possibilities of developing countries participating in the EUREKA programme in Europe have also been explored. Close cooperation is maintained in such activities with the promotional work of the Industrial Investment Division.

133. In compliance with paragraph 3 (c) of resolution GC.4/Res.13, technology transfer resulting from the recommendations of the System of Consultations meetings was promoted with a study analysing the state of the art of the aluminium industry in Latin America in the framework of the global development of the sector. The study was an outcome of the regional expert group meeting on production complementarities in the aluminium industry in Latin America, held at Kingston, Jamaica, in 1990. A further result of that meeting was the inclusion of a programme for the ecologically sustainable development of the aluminium industry in the United Nations Development Programme (UNDP) technical support services at the programme level (TSS-1). In the fisheries industry sector, a 1992 cooperation meeting between African and Asian fisheries specialists in Singapore examined problems related to training, research and development, post-harvest technology and infrastructure for the sector. The meeting offered the opportunity for presentation of project proposals by participants from African countries. Future projects aimed at cooperation between African and Asian specialists were discussed. This action followed recommendations of the 1991 Regional Consultation on the Fisheries Industry for Asia and the Pacific Island Countries (December 1991).

Technology transfer constraints

134. UNIDO involvement in transfers of technology, in connection with industrial operation activities, reveals constraints on the part of both suppliers and purchasers of technology. Developing countries frequently lack appropriate information and suffer an impaired legislative climate; they lack an adequate absorptive capacity while encountering high costs. Industrialized countries in certain cases fail to take into account special needs of developing countries, lack adequate market knowledge of those countries and of financial mechanisms. Their small- and medium-scale enterprises do not appear to have access to mechanisms such as export promotion schemes and effective communication with developing countries in technology and product matters.

135. Lack of appropriate information results in misconceptions and affects various pertinent features of the technologies to be transferred, as well as their optimal functioning. The cost of clean technology can be especially high since it might require new investment. The problem is compounded if economic incentives are not available in the form of subsidies for those choosing to introduce clean technologies. The lack of a legislative and regulatory framework and limited enforcement of existing legislation

influence the relative prices of traditional and clean technology, create uncertainty for prospective investors and discourage foreign or national investment in clean technology. The designing of a given technology is influenced by the infrastructure of the country within which the technology is applied. One of the main factors is related to the capabilities of middle management in readjusting the industrial aptitudes at the level required for optimal functioning of the imported technology. UNIDO endeavours to provide continuous support and advisory services to developing countries in order to alleviate the above constraints.

B. Technology assimilation and adaptation

136. Parallel to capacities to negotiate and purchase foreign technology, technological self-reliance requires an endogenous capacity to assimilate, adapt and develop it in the national or enterprise interest. For this, smooth technology transfer within a country is essential. The technology acquisition and negotiation programme therefore assists developing countries to develop strategies to promote and facilitate internal transfers through contractual relationships. Two approaches are considered. One promotes institutions such as technology transfer offices, using their institutional support and expertise in contracting to serve as the link for collaborative arrangements between research and development institutions and industry, for example through contract research. The other approach raises awareness of research and development institutions concerning the commercial opportunities of their work and strategies available to them such as licensing and other partnering arrangements.

137. Technology acquisition by an enterprise is not, by itself, sufficient, unless it is followed by continuous improvement in production and organization. It is manufacturing technology that is the key to competitiveness. A sensitization programme has been undertaken to emphasize the need to advance manufacturing technology in all enterprises. Recent activities include: a UNIDO inter-divisional sensitization campaign for Africa's leather industry; promotion of international cooperation to improve manufacturing; awareness-building in the field of total quality management; and the operation of ISO 9000 (ibid., para. 46).

138. Many industrial technology research and service institutes established 20 or 30 years ago now encounter adaptation problems themselves. Set up then with government funding to service a largely state-owned industry, today they must adjust to changing economic, industrial and technological trends, in particular severe curtailment of public funds on one hand and increasing privatization of industry on the other. Although expected to pay their own way with research and development and related services funded by private industry, most must first undergo major restructuring of their programmes, staff and administration. Experience gathered in a pilot programme for Latin America undertaken jointly with the International Development Research Centre (IDRC), Canada, was presented as a preliminary diagnosis of the problems at a meeting at Caracas, Venezuela, in February 1993. Work will continue to develop an international programme on revitalization of industrial research and service institutes at a further meeting at Buenos Aires in July 1993. Meanwhile further requests for assistance in solving institutional adaptation problems have been received, suggesting that specialist advisory services might be a cost-effective way to service both Governments and industry in that respect.

139. Many of the aspects related to assimilation and adaptation of technology can be applied to technology management. In line with decision IDB.9/Dec.10, paragraph (d)(iii), practical training in that area is promoted by UNIDO through seminars, workshops and training programmes aimed at bringing together all three of the main actors: government planners and policy managers, institution directors and enterprise managers. A detailed programme document for the training component, including modules and curricula, has been prepared. It is targeted at the national level, involves cooperation within UNIDO and from outside and can be easily adapted to specialized or multi-country requirements.

C. Technology appropriate to sustainable development

140. The issue of industrial technology for sustainable development (resolution GC.4/Res.13, para. 3 (d)) requires attention at both the conceptual and the practical levels, for example, in specific thrust areas where the impact will be high and the interest of funding agencies can be mobilized. Thus, discussions have begun with one country on an international programme for altering technological trajectories in favour of developing countries' sustainable development over the long term and for that purpose mobilizing the interest of policy-makers, institutions, enterprises and users. Major thrust areas currently foreseen are: biotechnology (especially promotion of biosafety, development of bioremediation and preservation of biodiversity); clean energy with emphasis on solar energy and small hydropower; ocean development including coastal management and marine biotechnologies; and materials technology focused on the use of local resources for composites and the environmental implications of materials extraction and use. Progress in activities related to biosafety and biodiversity is reported in the 1992 Annual Report (IDB.11/10, chap. IV, paras. 82-85). References to the areas of biotechnology, solar, hydropower and wind energy are also given in the reports on the environment and energy programmes included in the present document, in relation to sustainable development.

141. A new concept of appropriate technology for sustainable development will be evolved. It will feature specific local technologies that have already achieved commercial use in a developing country and that permit public participation as well as the use of market mechanisms and involvement of private enterprises. Examples include the transfer of skills and manufacture of food-processing equipment for rural sub-Saharan Africa, the development of small-scale gari processing machinery, manufacture of wind turbines for electricity generation in Egypt, and manufacture and diffusion of low-cost rural transport devices in Zimbabwe.

D. Implementation of the development and transfer of technology programme (IDB.3/36)

142. The reporting in the following paragraphs relates to the implementation of the requests addressed to the Director-General in General Conference resolution GC.4/Res.13, paragraphs 3 (a) and 4.

Technology growth areas

143. In implementing the programme on development and transfer of technology outlined in document IDB.3/26 and endorsed by the Board in decision IDB.3/Dec.6, the limitation of resources makes it imperative to be selective. Alongside issues concerning the acceleration of technology flows and the promotion of industrial technology for sustainable development, attention continues to be given to important growth areas that will have an impact on the industrial development of developing countries. Those areas include telecommunications, development of software as an industry and strengthening of developing countries' software production and exports, and the advancement of manufacturing technologies to cut costs and improve competitiveness (see also IDB.11/10, chap. IV, paras. 77-81).

144. Areas of future growth include promotion of technology transfer for manufacture of selected telecommunications equipment (IDB.3/26, para. 24). A project involving a market survey and identification of capacities and capabilities for manufacturing of selected telecommunications equipment in Africa is under implementation. Proposals for a roving exhibition are being developed for Africa (ibid., para. 78). Programmes for the Asian region are under implementation and could be adapted for the Latin American and Arab regions. Software is being developed for the telecommunications industry as part of promoting software as an industry in general where some developing countries have a comparative advantage. A third area of expected programme growth is the promotion of advances in manufacturing technology that reduce costs and improve competitiveness. While introduction of advanced manufacturing systems has a part to play, the programme aims at countries at all levels of development and emphasizes approaches such as production and quality improvement and inventory control. Involvement of professional associations and the promotion of a possible international centre for advancement of manufacturing technology are some of the activities under way.

145. Important initiatives relating to genetic engineering and biotechnology (IDB.3/26, para. 20) also continue. The progress relating to the International Centre for Genetic Engineering and Biotechnology (ICGEB) has been reported on in the 1992 Annual Report (ibid., paras. 82-85). In addition, the diagnostic kit for HIV infections developed with ICGEB technology was offered to several countries in Africa and a positive interest in acquiring the technology to manufacture the kit has been received from two countries. With regard to the international centre for science and high technology, pilot activities continue pending the conclusion of the necessary agreements with the Government of Italy for the long-term establishment of the centre (ibid., para. 87). Such agreements would also facilitate the adoption of legislation enabling regular annual contributions to the centre and to that end negotiations are under way with the Italian authorities.

146. There is continued interest on the part of several countries to establish international centres in selected areas, such as new and renewable sources of energy (IDB.3/26, para. 27). As a follow-up to studies and expert group meetings on the hydrogen energy technology in past years, the Government of Turkey requested UNIDO to undertake a study on the feasibility of establishing an international centre on hydrogen energy technology in Turkey. A trust fund project financed by Turkey started implementation. Based on the earlier work of UNIDO in promoting solar energy technology, and specifically the recommendations of the Consultative Group on Solar Energy Research and Application (COSERA), the Government of Australia made a proposal, including the offer of substantial financial contributions, to establish a centre for application of solar energy at Perth (ibid., para. 91). The Centre would emphasize international cooperation for the benefit of developing countries and be planned as part of a network. At the COSERA meeting, UNIDO and Australia were called upon to promote the establishment of such a Centre at Perth as early as possible and to carry out the necessary preparatory and pilot activities in support of the initiative.

147. New and high technologies (IDB.3/26, para. 19) also figure increasingly in recent technical cooperation activities. A transfer of new technology in the field of laser application in material processing has been carried out in Romania. A microprocessor application engineering programme, very large-scale integrated (VLSI) design and prototyping, fibre optic technology, and failure analysis for semi-conductor devices were delivered in India. Transfer of technology in the field of machine tool design, development and production was arranged for China, Ethiopia, Indonesia, Thailand and Trinidad and Tobago. Technology in the field of computer applications in industry (computer-aided design, computer-aided manufacturing, computer-integrated manufacturing, computer-aided inspection) was introduced in Egypt, India, Libyan Arab Jamahiriya, Seychelles, Sri Lanka and the United Republic of Tanzania.

Contributions to regional and subregional endeavours

148. Many of the programmes described in document IDB.3/26 are undertaken in different regions. They are documented in successive Annual Reports and the following updates information in document IDB.11/10, chap. IV.

149. Africa - A training workshop on genetic engineering techniques is planned for scientists from African countries; a regional workshop, funded from the programme for the Industrial Development Decade for Africa (IDDA), is to be held in Nigeria to examine the establishment of an African regional network of materials technology centres; the regional African-TIES network is being further developed as a unique source of the latest data, information and materials related to technology transfer transactions at national and international levels. Under the IDDA programme, promotion of intraregional technology exchanges is being added to the African-TIES programme.

150. Asia and the Pacific - To facilitate the technology transfer among 12 Asian countries an industrial technology and market information network is being established of which a second phase, using UNDP funding, is under implementation; as a follow-up to a 1992 workshop for representatives from the telecommunications industry in the Asia and Pacific region (India, 1992), a regional testing and certification centre for telecommunications equipment is being promoted and cooperation with the Asia-Pacific Telecommunity and the International Telecommunications Union is to be sought; information on biosafety will be made available to Member States through the UNIDO Biosafety Information Network and Advisory Service programme, to be promoted initially in Asia with cooperation from the Association of South-East Asian Nations subcommittee on biotechnology; to promote commercialization of biotechnological research and development, working relationships were established with financial institutions such as the Asian Development Bank and the World Bank as well as with the biotechnology industrial associations such as the Senior Advisory Group on Biotechnology and American Biotechnology Company Association; and a joint UNIDO-World Bank conference on marine biotechnology in South-East Asia is planned to be held in Thailand.

151. Latin America and the Caribbean - Responding to requests from several Latin American countries, assistance is being provided in the establishment of an operational framework to integrate computerization systems in Latin American and the Caribbean and in developing an INTIB networking system for the region. A workshop on technology and financing in Latin America was held in cooperation with the Latin American Association of Development Financing Institutions. Promotional activities related to industrial incubators have continued and a second phase of the Berisso, Argentina, project - aimed at strengthening microelectronics capabilities in the Regional Network for Microelectronics for the member countries of the Economic Commission for Latin America and the Caribbean has been approved and implementation begun.

152. Arab countries - A demonstration of INTIB and assessment of existing and future information systems was provided for all Maghreb countries, and Bahrain generated requests for projects to provide information services to small- and medium-sized industries; in cooperation with the Arab Industrial Development and Mining Organization, a subregional workshop on industrial information and documentation is being organized in Oman; cooperation continued with the Economic and Social Commission for Western Asia on informatics, biotechnology and new materials through joint meetings and proposals for joint projects; and a joint seminar will be held in 1994 on technology policy, with emphasis on technology acquisition.

E. Technologies adapted and promoted by UNIDO

153. As reported to the Board in document IDB.9/6, technologies adapted and transferred by UNIDO arise either in the context of technical cooperation projects or are developed by the Organization for the benefit of developing countries. An updated list of those categories of technology is provided in the annex to the present document. The list reflects the experience and expertise UNIDO has gathered over the years in having technologies already adapted or transferred in specific practical circumstances through technical cooperation projects, and in some cases in having promoted the development of a technology itself. Further, because of its support of ICGEB, UNIDO has the opportunity to draw on the biotechnologies available from that organization.

154. Such lists can be the basis both for new requests from Member States seeking similar UNIDO assistance with the technologies indicated, i.e. in technical cooperation projects with respect to their own industrial development, as well as the basis for bilateral TCDC, with or without UNIDO's catalytic involvement. Bearing this in mind it is proposed to establish a database of such projects within INTIB with a view to having a continuously updated source of expertise, training and information-sharing possibilities available to Member States at any time.

## XV. INDUSTRIAL INVESTMENT PROMOTION

155. In its resolution GC.4/Res.17, the General Conference, inter alia, stressed the increasing importance of the industrial investment activities of UNIDO and called upon the Director-General to ensure that specific aspects were covered in the implementation of those activities. In addition to reiterating that request, the Industrial Development Board in decision IDB.9/Dec.11 requested the Director-General to continue to provide guidance as to the financial resources required to enable the regional investment studies to be undertaken and to report to the Board at its eleventh session on the efforts undertaken to strengthen cooperation with international financial institutions on the promotion of industrial investment.

156. Several of the relevant aspects contained in those mandates were referred to in document IDB.9/7, paragraphs 23 to 44. The present report provides updated information as appropriate in addition to the information requested by the Board in decision IDB.9/Dec.11. Attention is also drawn to the information on industrial investment promotion activities contained in the Annual Report 1992 (IDB.11/10, chap. IV, paras. 3-33).

A. Implementation of resolution GC.4/Res.17

157. In Board decision IDB.9/Dec.11, paragraph (d)(i), the Director-General was requested to continue to implement industrial investment promotion activities as stated in General Conference resolution GC.4/Res.17, paragraphs 3 to 6.

158. A report on the activities carried out in response to resolution GC.4/Res.17, paragraph 3 (a) to (j) was given in document IDB.9/7, paragraphs 27 to 34, and is updated below.

159. With reference to paragraph 3 (b) of the resolution, an electronic network is being established to improve coordination of the investment promotion activities between IPS offices, the focal points of UNIDO in developing countries and UNIDO Headquarters. The network would (a) enable the establishment of a centralized database of investment project proposals, accessible to IPS offices, (b) improve the communication structure of the investment promotion network and (c) facilitate an effective distribution of data to the parties concerned.

160. As requested in paragraph 3 (c) of the resolution an active effort is under way to improve coordination between the Industrial Cooperation Centres (ICCs) and the UNIDO Investment Promotion Service (IPS) offices. The Directors of ICCs are invited to the heads of service meeting of IPS offices, and already the coordination is apparent in terms of the delegates programme. Furthermore, coordination is maintained between ICCs and IPS offices in the promotion of projects between the host countries of IPS offices and China and the Russian Federation respectively. Illustrative of that cooperation is the joint programme that has been developed between the IPS office in Paris, France, and ICC in Moscow, Russian Federation, where projects are transmitted regularly from the Centre in Moscow for promotion by the IPS office in Paris. Already 12 projects in such sectors as agro-industries, transport and energy are under active promotion by the IPS office in Paris. It is planned to expand cooperation with representatives of that Centre taking part in the promotional effort being undertaken in France. Other examples of cooperation include, among others, the contribution of ICC in Beijing, China, through its foreign industrial cooperation experts, in the preparation of specific investment projects for investment forums held in China with the participation of IPS offices and their client investors; the cooperation between the Centre at Beijing and the IPS office at Seoul, Republic of Korea, in organizing an investment seminar for Korean investors to China; and the annual participation of Russian business delegations in the Italian technology fair arranged between the Centre in Moscow and the IPS office at Milan.

161. Concerning paragraph 3 (f) of the resolution, attention is being given to promote the increasing participation of representatives of developing countries in the delegates programme organized by IPS offices. An intensive effort to diversify the sources of funds for supporting that programme is under way both in terms of multilateral and bilateral support. At the same time, an expansion of the facilities to accommodate delegates from developing countries is taking place in such IPS offices as Milan, Italy, and Washington, United States of America. It is anticipated that those developments will result in an expansion of the delegates programme during 1993.

162. In paragraph 3 (j) of the resolution the Director-General was requested to prepare analytical information of global investment trends, disaggregated by sector and subsector as well as by geographical regions, and include it in the UNIDO annual Global Report. This analysis has not been possible because of the inadequacy of resources available for the preparation of the Global Report. Future issues of the Global Report will include such improved analytical information should additional resources be made available for that purpose.

163. On the subject of ICCs referred to in paragraph 4 of the resolution, the two Centres in Beijing and Moscow are operating in line with "The operational manual for the Investment Promotion Service offices" prepared by the Secretariat. The activities of the Centres are in conformity with the policy guidelines of UNIDO programmes approved by the policy-making organs. The unique feature of the Centres in Beijing and Moscow is the assignment of foreign industrial cooperation experts that are financed by trust fund contributions not specifically allocated to the Centres. Since the establishment of the Centres, one expert each from Denmark, Republic of Korea and Spain, have been assigned to Beijing, and one each from France, Japan, the Republic of Korea and the United States of America assigned to Moscow. Because of the current economic situation in the People's Republic of China, as well as in the Russian Federation, activities of the two Centres tend to be dominated by the "inward flow" of various development resources from the West in the form of capital, know-how, and training, with the notable exception of the export of selected industrial technologies through the Moscow Centre. Owing to the rapidly changing socio-economic conditions of the two countries hosting the Centres, the belief is that it is premature to develop guidelines until such time as the Secretariat has gained enough operational experience through the current experimental period of the Centres. In the meantime, the guidelines contained in the operational manual will be used to their greatest extent for the operation of the Centres.

164. Regarding the IPS operating manual, (para. 5 of the resolution) the manual was finalized in 1992 and is presently used by the IPS offices. Reference copies will be made available to delegations at the eleventh session of the Board.

### B. Study on regional investment promotion

165. In paragraph 3 (i) of the resolution, the Director-General was requested to complete and present the study on the possibilities and different modalities for fostering regional investment promotion activities, requested in resolution GC.3/Res.19 and Board decisions IDB.6/Dec.15 and IDB.8/Dec.13.

166. In chapter I of document IDB.9/7 the Secretariat gave estimates of the resources required to undertake such a study, and explained the type of activities that UNIDO would carry out until sufficient resources became available for the preparation of the study. The Board, in its decision IDB.9/Dec.11, paragraph (d)(ii), requested the Director-General to continue to provide guidance as to the financial resources required to enable the regional investment studies to be undertaken. As of the date of preparation of the present report the estimates provided in paragraph 22 of document IDB.9/7 remain valid and there are still no indications that such resources could be made available.

### C. Cooperation with international financial institutions

167. In responding to paragraph (d)(iii) of Board decision IDB.9/Dec.11, the Industrial Investment Division's cooperation with international financial institutions, in the field of investment promotion, has been in the form of the following four categories:

(a) Exchange of information or views;

(b) Participation as a potential investor in certain investment projects;

(c) Negotiation of joint technical cooperation programmes (pipeline);

(d) Implementation of joint technical cooperation programmes (ongoing or completed).

168. Illustrative of that cooperation were the activities of staff at UNIDO Headquarters and IPS offices. These activities covered the World Bank group: the International Bank for Reconstruction and Development, the International Finance Corporation and the Multilateral Investment Guarantee Agency; regional development banks such as the European Bank for Reconstruction and Development, the Inter-American Development Bank, the Inter-American Investment Corporation, the Caribbean Development Bank, the Andean Development Corporation and the Asian Finance Company; Banco Sabadell, Banesto, Banco de Bilbao-Vizcaya and Banco de Fomento y Comercio Exterior; associations of development financing institutions in Africa, Asia and the Pacific, Latin America and other regions, and the African Project Development Facility, among others.

## XVI. EVALUATION OF UNIDO PROGRAMMES AND ACTIVITIES

169. Information on evaluation activities is provided in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. II, paras. 25-36).

170. The financing of headquarters programme evaluations, either by regular budget or by voluntary contributions, has not been resolved. That issue will be the subject of a submission to the General Conference at its fifth session, in line with resolution GC.4/Res.16, paragraph 5 (c), which requests the Director-General to report on the implementation of the resolution to the General Conference at its fifth session, in particular on arrangements made for the future financing of evaluation activities.

### A. Development and transfer of technology

171. In accordance with Industrial Development Board decision IDB.5/Dec.12, paragraph (c), the Director-General was requested to undertake, inter alia, an in-depth evaluation of the activities of UNIDO in the field of development and transfer of technology. That decision was reiterated by the General Conference in resolution GC.4/Res.16, paragraph 5 (b), in which the Director-General was requested, inter alia, "to submit the in-depth evaluation on development and transfer of technology to the Industrial Development Board at its eleventh session, pending the availability of financial resources".

172. Progress in evaluating the activities of UNIDO in the area of development and transfer of technology has suffered from the lack of staff and financial resources, and, therefore, the evaluation could not be completed for presentation to the Board at its eleventh session. Furthermore, such activities cut across the work of the Organization and the wish to arrive at a reasonable trade-off between the need to concentrate the activities of the Organization in specific market niches and the spread of technologies from basic to advanced, from development to acquisition, makes this evaluation the most difficult one tackled so far.

173. However, despite the above-mentioned drawbacks and using consultancy funds available to the Director-General, a modest beginning was made to undertake the evaluation in 1992. It is estimated that approximately $250,000 would be required for consultants and travel over a period of one and one-half years - once resources are available - to complete the evaluation.

### B. Human resource development

174. In resolution GC.4/Res.16, paragraph (a), the Director-General was requested to make available the in-depth evaluation on human resource development upon its completion in 1992 and submit it to the Board at its eleventh session. As explained in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. II, para. 28), this evaluation, which was financed by the Government of Germany, will be completed during the month of May 1993. A summary of the evaluation will be made available to the Board at its eleventh session.

## XVII. WOMEN IN THE SECRETARIAT

175. The General Conference in its decision GC.4/Dec.24 recalled its decision GC.3/Dec.26 and Industrial Development Board decisions IDB.7/Dec.22 and IDB.8/Dec.18 calling for efforts to increase the number of women in the Secretariat, particularly at the senior and decision-making levels and to achieve, to the extent possible and within existing resources, targets for their overall representation in geographical posts by 1993 and 1995 of 25 and 30 per cent respectively. In the same decision, the General Conference took note of the improvement in the overall representation of women in posts subject to geographical distribution. However, the Conference noted with concern that women's representation at the P-5 and above levels had further decreased, and that out of a total of 129 staff at those levels, there were only seven women (5.4 per cent). The Conference further urged the Director-General to continue the efforts towards recruiting women in posts subject to geographical distribution and in particular to accord priority to increased representation of women at the P-5 and above levels within the overall target set for 1993 and 1995, and encouraged Governments to assist in those efforts by identifying women candidates for vacancies.

176. Information on the representation of women in the Secretariat as of 31 December 1992 is provided in the Annual Report of UNIDO, 1992 (IDB.11/10, chap. VII and corresponding tables and figure). The following paragraphs supplement and update that information.

### A. Progress made in increasing the representation of women

177. Since the adoption of Board decision IDB.7/Dec.22 in 1990, women's representation in Professional posts has shown a marked improvement both in relative and absolute terms. Indeed, as table 1 demonstrates, the Organization has very nearly reached the target of 25 per cent for 1993 established by the Board in decision IDB.7/Dec.22. The overall improvement in the representation of women is also reflected at the department level, as shown in table 2. However, further progress towards the target of 30 per cent by 1995 will, to a large extent, depend on the financial situation and the ability of the Organization to fill vacancies. Achievement of the target will also depend on the cooperation of Member States in submitting additional women candidates, particularly for posts at the senior levels.

178. While women in posts subject to geographical distribution accounted for 17.8 per cent in December 1989, that figure had increased to 21.7 per cent by October 1991 and accounted for 24.9 per cent in April 1993. *In absolute terms* the number of women in geographical posts increased over that period from 59 to 89, representing a 50 per cent increase in just over three years. Although the representation of women in all professional posts has also increased, the figures are somewhat less favourable than those for posts subject to geographical distribution. The representation of women in all professional posts increased from 17.8 per cent in December 1989 to 24.1 per cent in April 1993. In absolute terms the number of women in all professional posts increased from 81 to 105 in the same period, representing a 30 per cent increase.

179. There has been a noticeable shift in the proportion of women from the lower to the middle Professional grades. Whereas in 1989 only 16.0 per cent of all Professional women were at the P-4 level, that proportion had increased to 37.1 per cent by April 1993. In relation to all staff at that level, their representation increased from 16 to 25 per cent. The percentage of all Professional women in the lower categories (below P-4) has decreased from 58 to 54 per cent. Women's representation at the P-5 and above levels, however, has remained problematic. In 1991 there were seven women at those levels (5.4 per cent). Since then, the number has increased to 10 (8.1 per cent). That increase would have been even greater had an unusually large number of women not left the Organization between January 1991 and January 1992. During that short period, four of the nine women at the senior levels left the Organization, mainly on retirement, and had to be replaced either through external recruitment or through promotion.

180. The continuous entry of women at the junior Professional levels will help to stabilize their overall representation as more senior women retire from service. Since the introduction of a system for advancement from the General Service to the Professional category in 1990, nine staff members have been selected for Professional posts at the P-1/P-2 levels, all of whom were women.

181. Women account for a significant proportion of external recruits, particularly when compared to their share in the secretariat roster of candidates, which is currently 21.2 per cent. During 1992, 38 per cent of all new recruits were women, of which 20 per cent were at the P-5 level. Tables 3 and 4 reflect the composition of the Secretariat by list of Member countries and the number of candidates on the roster by gender.

182. However modest, the representation of women at the senior levels in UNIDO should also be seen in relation to the average representation of women at those levels in the organizations of the United Nations common system which, as of 31 December 1991, was reported to be 3.6 per cent. 1/ It is expected that women's representation at the senior levels in UNIDO will reach some 9 per cent by the end of 1993 since there are currently several women who have been selected for posts classified at the *P-5 level and who may be promoted to that level*. Furthermore the Organization is focusing its efforts on improving the status of women in the Secretariat, particularly as regards the advancement of women already employed. A review of those efforts and the identification of special measures for increasing the representation of women at the levels of P-5 and above are a matter of priority.

B. Measures undertaken by the Secretariat

183. In decision IDB.8/Dec.18 the Industrial Development Board requested the Director-General, within existing resources, to reinforce the existing machinery in order to assist the High-level Coordinator for the Improvement of the Status of Women in the Secretariat in his efforts to achieve targets for the participation of women, particularly at the senior levels, and ensure that there is a further steady increase in that respect. Accordingly, the Joint Advisory Committee (JAC) Sub-Committee on Women was reactivated in late 1991 with the purpose of reviewing the procedures and advising the Director-General on any special measures required in order to bring about genuine change in that respect. During the 15 meetings held in 1992 the Sub-Committee's terms of reference were established and published (UNIDO/DA/PS/INF.1201) and a comprehensive review was undertaken of the Plan of Action to Improve the Status of Women in the Secretariat. Recommendations were made by the Sub-Committee through JAC and were subsequently approved early in 1993 by the Acting Director-General. They include a comprehensive set of recommendations on recruitment, promotion and attitudes that are expected to have an impact on the status of women in the Secretariat and their conditions of work in general. The recommendations are intended to accommodate women's often multiple roles in society, while at the same time enabling them to develop fully their careers - preconditions for attracting women applicants.

184. In making its recommendations the Sub-Committee took due account of United Nations General Assembly resolution 47/216 (para. 1), which urges the organizations of the common system to introduce a coherent plan for improving the status of women in each organization in the course of 1993 with full respect for their basic instruments and taking into account the recommendations of the International Civil Service Commission (ICSC). As part of that process, the General Assembly considered that such organizations should give attention not only to the representation, promotion and career progression of women but also to work and family-related issues, spouse employment and the creation of an organizational climate conducive to the equal participation of men and women.

185. The recommendations of the JAC Sub-Committee constitute the UNIDO action programme and are now being disseminated throughout the Organization (UNIDO/DA/PS/INF.1230) as well as the United Nations common system at the request of ICSC during its thirty-seventh session. The action programme establishes the policy and lays down comprehensive guidelines to assist the Coordinator in his efforts to achieve the targets

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1/ ICSC/37/A.16.

set by the governing bodies for 1995, provided that the Organization is in a position to undertake recruitment against vacant posts.

186. The workshops held by the Staff Development and Training Section under the management development programme, reported to earlier sessions of the Board, 2/ continued throughout 1992. Of relevance to women in the Secretariat were the workshops on the development of negotiation skills, on leadership styles and effective management. Of the 105 participants in the 1992 programme, 40 were women.

187. The Organization continues to ensure that women are equitably represented on the bodies responsible for reviewing appointments and promotions as well as on other joint bodies. In addition, both the Appointment and Promotion Committee and the Appointment and Promotion Board are chaired by women.

188. UNIDO exchanges information on women candidates, particularly at the senior levels, with other organizations in the United Nations common system. It is also favourably disposed to requests from other United Nations organizations to release its female staff for assignments or secondments and participation in peace-keeping missions in order to give them the opportunity to be exposed to the wide range of conditions and circumstances under which the United Nations system operates. Such assignments could open up further avenues to broaden their experience and allow them to serve in challenging locations in order to discharge the various mandates of the United Nations system.

189. The interest of the UNIDO Secretariat in advancing the status of women in Professional posts is not limited to actions within its own Secretariat but extends to activities at the inter-organizational level. Accordingly, UNIDO participated in the inter-agency meeting held in February 1992 of the Working Group on the Status of Women in the United Nations system established by the Commission on the Status of Women at its 1990 summer session. The mandate of the Working Group was to identify the problems facing women in both the General Service and Professional categories in the organizations of the United Nations common system and to assist ICSC in devising strategies for the implementation of its earlier recommendations in that area. Following the submission of the report of the ICSC Working Group, the General Assembly adopted resolution 47/216 referred to in paragraph 184 above.

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2/ IDB.8/15, para. 10.

Table 1

Composition of Professional staff
in posts subject to geographical distribution

31 December 1989 and 30 April 1993 a/

| | Male | | Female | | Total | |
|---|---|---|---|---|---|---|
| Grade | 1989 | 1993 | 1989 | 1993 | 1989 | 1993 |
| DDG | 5 | 4 | 0 | 0 | 5 | 4 |
| D-2 | 3 | 6 | 0 | 1 | 3 | 7 |
| D-1 | 26 | 24 | 2 | 0 | 28 | 24 |
| P-5 | 77 | 76 | 6 | 9 | 83 | 85 |
| P-4 | 100 | 99 | 19 | 33 | 119 | 132 |
| P-3 | 52 | 46 | 24 | 27 | 76 | 73 |
| P-2/1 | 10 | 14 | 8 | 19 | 18 | 33 |
| Total | 273 | 269 | 59 | 89 | 332 | 358 |
| % | 82.2 | 75.1 | 17.8 | 24.9 | 100 | 100 |

*For details concerning the years 1990 to 1992, see IDB.11/10, chap. VII.

Table 2

Comparison of male and female staff in posts subject to geographical distribution, by Department

31 December 1989 and 30 April 1993

| | 31 December 1989 | | | 30 April 1993 | | |
|---|---|---|---|---|---|---|
| DEPARTMENT | MALE | FEMALE | TOTAL | MALE | FEMALE | TOTAL |
| ODG | 13 (92.9%) | 1 (7.1%) | 14 | 12 (75.0%) | 4 (25.0%) | 16 |
| EPL | 12 (63.2%) | 7 (36.8%) | 19 | 9 (52.9%) | 8 (47.1%) | 17 |
| DA | 35 (70.0%) | 15 (30.0%) | 50 | 34 (59.6%) | 23 (40.4%) | 57 |
| PPD | 70 (79.5%) | 18 (20.5%) | 88 | 76 (76.8%) | 23 (23.2%) | 99 |
| IO | 91 (90.1%) | 10 (9.9%) | 101 | 77 (82.8%) | 16 (17.2%) | 93 |
| IPCT | 38 (84.4%) | 7 (15.6%) | 45 | 43 (76.8%) | 13 (23.2%) | 56 |
| SEC | 14 (93.3%) | 1 (6.7%) | 15 | 18 (90.0%) | 2 (10.0%) | 20 |

ODG Office of the Director-General
EPL Department of External Relations, Public Information, Language and Documentation Services
DA Department of Administration
PPD Department for Programme and Project Development
IO Department of Industrial Operations
IPCT Department for Industrial Promotion, Consultations and Technology
SEC Staff on assignment/secondment/mission

## Table 3

### Professional staff in posts subject to geographical distribution, by List of Member States, as of 30 April 1993

| List of States a/ | Male | % | Female | % | Total |
|---|---|---|---|---|---|
| A and C | 90 | 77.6 | 26 | 22.4 | 116 |
| B | 139 | 69.2 | 62 | 30.8 | 201 |
| D | 38 | 97.4 | 1 | 2.6 | 39 |
| Others | 2 | | | | |
| TOTAL | 269 | | 89 | | 358 |

## Table 4

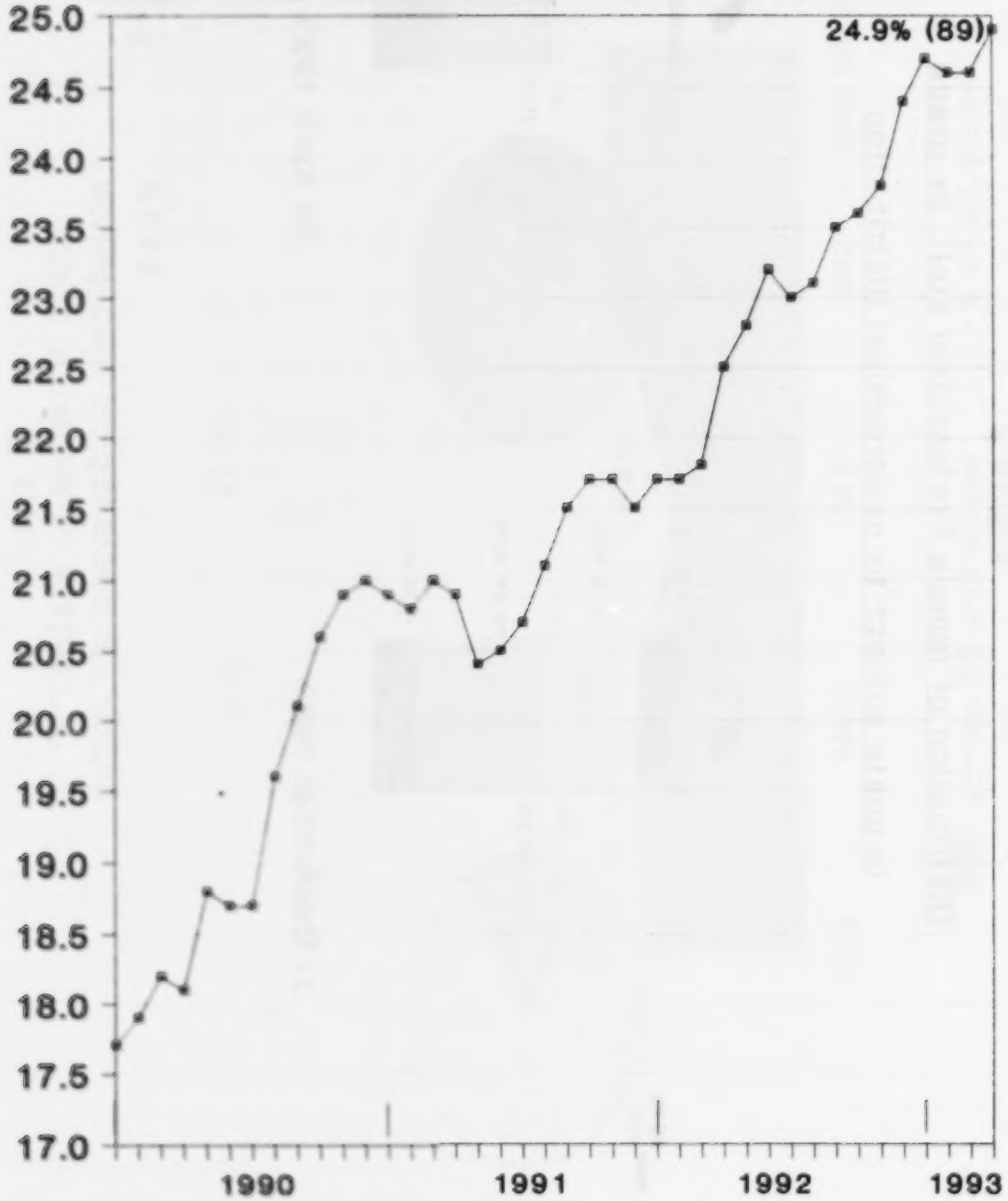
### Number of candidates on the Secretariat roster, as of April 1993

| List of States a/ | Male | % | Female | % | Total |
|---|---|---|---|---|---|
| A and C | 1282 | 80.1 | 319 | 19.9 | 1,601 |
| B | 735 | 76.2 | 230 | 23.8 | 965 |
| D | 107 | 84.3 | 20 | 15.7 | 127 |
| Others | 24 | 72.7 | 9 | 27.3 | 33 |
| TOTAL | 2148 | 78.8 | 578 | 21.2 | 2,726 |

a/ Refers to lists of States included in Annex I to the Constitution (IDB.10/35/Rev.1).

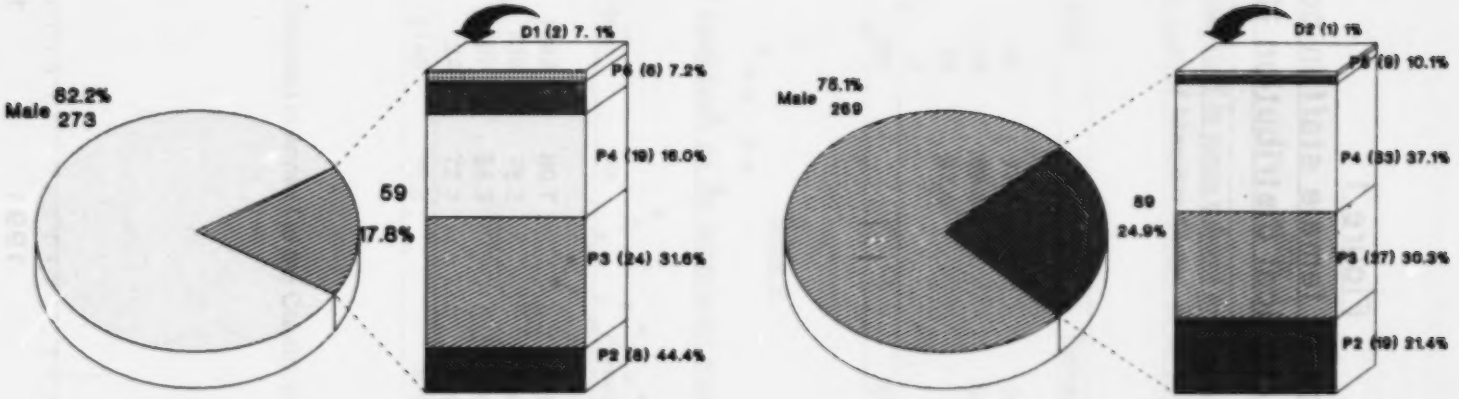
Figure 1

Percentage of female staff in posts subject to geographical distribution (1990-1993)



## Figure 2

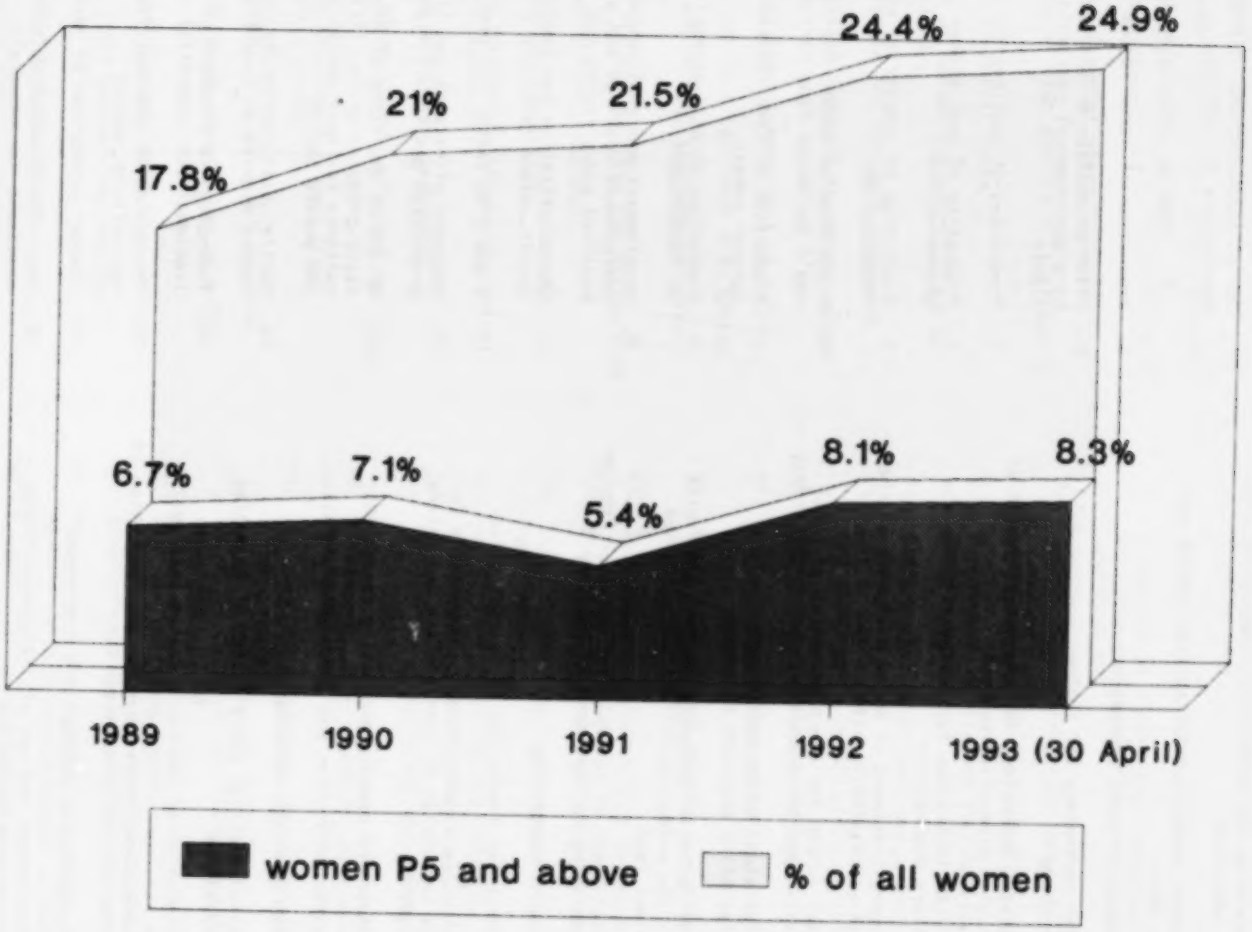
## Distribution of female Professional staff, by grade in posts subject to geographical distribution




31 December 1989

30 April 1993

Figure 3
Percentage of women in posts
subject to geographical distribution



Annex

## LIST OF TECHNOLOGIES ADAPTED, PROMOTED OR DEVELOPED BY UNIDO, 1988 TO 1993*

### A. Agro-industries sector

1. Processing and diffusion of the utilization of rubberwood
2. Cleaner production for textile dyeing and finishing
3. Tannery effluent treatment
4. Clean technology for leather tanning and finishing
5. Footwear technology for the establishment of new shoe production methods
6. CAD/CAM technology for footwear design and pattern engineering
7. Primary treatment of water effluents of the fish processing industry
8. Model scheme for the improvement of rural small-capacity coconut processing operations
9. Pilot study to determine possible alternative end-uses of pepper
10. Utilization of balanites aegyptiaca fruits for the production of vegetable oil and animal feed
11. Development of suitable software for CAD/CAM processing in the footwear industry
12. Coconut processing
13. Industrial production of coconut cream
14. Spirulina algae processing operations for the production of food protein and natural pigments
15. Integrated cassava processing operations
16. Jojoba production and processing operations
17. Rice bran oil refining
18. Agro-industrial exploitation of Balanites aegyptiaca
19. Production of non-toxic castor-bean meal
20. Rubber-seed processing for the production of vegetable oil and animal feed
21. Production of coconut oil from copra
22. Development and use of indigenous fibres - processing technology
23. Ramie technology
24. Optimization of dyeing processes by using photospectrometers
25. Garment development processing optimization by applying CAD systems
26. CAD techniques in producing woven and printed textile designs
27. Use of unconventional fibres for the manufacture of fabrics

### B. Chemical Industries sector

1. Production of large volume parenterals
2. Pilot production of pharmaceutical chemicals by organochemical synthesis in multipurpose plants
3. Production of vaccines for human use
4. Production of oral dosage forms of pharmaceuticals
5. Production of industrial enzymes by fermentation
6. Production of rubber bearings to insulate small buildings from earthquake
7. Production of tyre retreading based on natural rubber
8. Production of anti-corrosive paints based on rubber-seed oil
9. Development and application of high performance coatings and glues based on modified epoxy resins and laccol resins
10. Characterization and production of new zeolite-based catalysts
11. R and D in castor oil processing
12. Recovery of natural gas liquids from associated gas in oil fields
13. Design of new types of bio-reactors for super-producer cells, tissue and cell cultures for application in agriculture and public health
14. Partial desalination by ion exchange using carbon dioxide as regenerant
15. Technology development of water treatment for industrial use
16. Production of charcoal from agricultural wastes
17. Cleaner production of herbicides
18. Pesticide formulation using locally available raw materials
19. Production of insecticide active ingredient
20. Waste-water treatment to remove toxic chemicals
21. High temperature incineration of hazardous waste
22. Toxicological evaluation of chemicals for agriculture, pharmaceutical, food preservatives, cosmetics, etc., according to good laboratory practice

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* Updating of list contained in document IDB.9/6.

23. Beneficiation of low-grade phosphatic ores
24. Use of indigenous glaze raw materials for pottery
25. Thermal tempering of flat glass with vertical hanging method
26. Physical modelling of float glass furnaces
27. Simulation model for electrical boosting of float glass furnaces
28. Cooling regulation of glass furnaces
29. Purification of high quality silica sand by flotation
30. Development of dental ceramics
31. Application of montmorillionitic clays as soil conditioners
32. Use of bentonite for effluent treatment
33. Use of superfine zirconia as ceramic glaze material
34. Production of fibro-cement roofing tiles
35. Cold stabilization of extruded clay bricks
36. Use of fly ash in high strength concrete applications
37. High volume fly ash concrete for paving road
38. Fly ash in structural concrete
39. Fly ash as backfill material
40. Production of hard borosilicate glassware from local raw materials
41. Glass furnace insulation technology
42. Development of horizontal stirrers for glass melting tanks
43. Energy saving measures for coal fired boilers in glass production
44. Energy management in float glass furnaces
45. Application of waste coal shales in brick manufacture
46. Coal shale- and fly ash-based clay blocks
47. Promotion of light weight clay roofing tiles
48. Fire detection and alarm systems
49. Sprinkler systems for fire protection
50. Furnace for testing of concrete structures
51. Furnace for production of garuda stones
52. Use of rice husk ash in glaze formulations
53. Waste heat recovery systems in the production of light building materials
54. Production of embossed polyvinylchloride (PVC) wall covering materials
55. Production of gypsum wall panelling materials
56. Manufacture of PVC floor covering materials
57. Equipment for production of expanded vermiculite wall covers
58. Development of waterproof and fire-resistant plaster board
59. Technology for fibrous gypsum plaster board
60. Promotion of dimensional compatibility of building components through modular coordination
61. Use of fly ash in mortar compositions
62. Use of fly ash in clay brick manufacture
63. Manufacture of fly ash prefabricated wall panels
64. Battery casting of sanitary ceramics
65. Use of sepiolite, sillimanite, wollastonite and attapulgite in off-shore drilling muds
66. Production of paper grade kaolin
67. Energy recuperation systems in kaolin refining
68. Processing of high alumina for fire resistant materials
69. Introduction of split tile extrusion
70. Production of high purity ultramarine
71. Solar evaporation techniques for rural applications
72. Manufacture of zircon crucibles for high temperature applications
73. Fabrication of porcelain pot mills, mortars and pestles
74. Development of a laboratory glassware kit for educational use
75. Regeneration of plaster of Paris from used ceramic moulds
76. ZnO-based ceramics for varistors and resistors
77. High and cold temperature isostatic pressing compaction technique and testing for advanced ceramic manufacture
78. Preparation of ultrafine $ZrO_2$-$YsO_3$ powders using co-precipitation technique
79. Ceramic coating of blast blades
80. Designing and making of dies for slip casting and injection moulding (thread guides, cutting tools, seals, tubes and shields)
81. Production of ceramic cutting tool kits
82. In-situ firing of traditional vaulted ceramic houses
83. Beneficiation of low grade kaolins
84. Ultrafine grinding of natural mineral pigments

85. Production of coco wood-based particle board

86. Pilot production of biologicals (vaccines, blood products, enzymes etc.)

87. Production of newsprint from bagasse

88. Chemical recovery of black-liquor waste from pulp and paper plants

89. Truck-tyre retreads based on natural rubber

90. Establishment of a multipurpose fine chemicals installation through the transfer of modular technological flowsheets and information to calculate production costs

91. Information on software for the identification of business opportunities in the chemical/petrochemical industry

92. Technological information on options for production of acetyl-p-aminophenol

93. Technological information on the processes of production of surfactant (sorbitan) and organic peroxides

94. Production of bio-inert aluminium-oxide ceramic implants and prostheses

95. Kiln furniture manufacturing based on cordierite ceramics

96. Continuous casting of sanitary ceramics

97. Zircon-based opacifying glazes for sanitary ceramics

98. Technology for ceramic materials with non-linear resistivity based on ZnO

99. Manufacture of organo-phosphorus pesticides

100. A wettable powder formulation using jet micronizer

101. R and D projects for the development of new pesticides

102. Facilities for the toxicological evaluation of chemicals for national and international registration

103. Laboratory/scaling up operations for various pesticides formulations using locally available raw materials

104. New pilot-scale technologies for the industrial production of herbal pharmaceuticals

105. Industrial production of lime in small-scale installations

106. Industrial production of cement in installations of an appropriate scale

107. Industrial production of bricks and tiles by mobile unit

108. Production of mother-of-pearl buttons

109. Application of bentonite in arid agriculture as sorbents

110. Industrial quarrying and processing technology for dimension stone

111. Integrated utilization of non-metallic minerals

112. Pigments based on natural non-metallic mineral resources

113. Processing of gemstones

114. Desilication of black liquors from chemical pulps using non-wood materials

115. Fibre fractionation of waste paper

116. Fibre fractionation of bamboo pulps

117. Modified lignin products from bamboo black liquors using ultra-filtration techniques

118. Salt production in solar evaporators in villages

119. Thermoplastic rubbers

120. Composite rubber

121. Preparation of user-friendly pesticides and pesticide formulations

122. Desilication of non-wood black liquor

123. Production of petrochemical products from agro-alcohol produced in the sugar industry

124. Production of nitrogen, phosphate and potassium fertilizers (in solid and liquid form, laboratory and bench scale)

125. Production of liquid natural rubber

126. Application and modification of liquid natural rubber

127. Production of composite materials based on natural rubber

128. Development of thermoplastic natural rubber

129. R and D for production of various enzymes for pharmaceutical and alimentary processes

130. Development of protocols for national chemical reference substances

131. Setting up of sensory evaluation panels for local essential oils and aroma chemicals

C. Engineering Industries sector

1. Machine tool design, development and manufacture

2. Moulds and die making

3. Appropriate food-processing equipment for rural women

4. Sewing machine development

5. Low-cost rural transport devices

6. $CO_2$, CFC elimination techniques

7. Diesel locomotive reliability and railwagon design and testing

8. Energy conservation in small- and medium-scale industries

9. Control and regulatory measures concerning motor vehicle emissions
10. Environmental testing and tropicalization of telecommunications equipment
11. Marine corrosion
12. Electronic packaging technology and ergonomic design for electromagnetics
13. Electronics design and technology process control and instrumentation
14. Very large-scale integrated design and prototyping
15. Computer-aided design and manufacturing of spare parts
16. Computer-integrated manufacturing
17. Battery production
18. Transformer production
19. Precision mechanical design for electronics industry
20. Laser application in material processing
21. Fibre-optics technology
22. Failure analysis for semi-conductor devices
23. Industrial robotics applications
24. Packaging technology and development
25. Tin plate coating
26. Lacquering of tin plate for sanitary can making
27. Solventless lamination of flexible packaging materials
28. Packaging technology
29. Fluid control research
30. Instrumentation and testing for control of hazardous material
31. Tool and dies
32. Rural equipment
33. Heat transfer technology
34. CAD/CAM technology
35. NC/CNC application
36. Tropicalization of computer equipment
37. Vacuum technology
38. Power distribution technology
39. Windmills, solar panels and mini-hydro plants
40. Manufacture of precision spare parts
41. Development of windmills
42. Manufacture of low-cost transport equipment
43. Design of post-harvest equipment
44. Fabrication of precision parts
45. Jigs, fixtures, dies and moulds design
46. Electronics and advanced technology
47. Application of alternative fuels for internal combustion engines
48. Establishment of production units for serial production of manual pumps designed specifically for local conditions
49. Manufacturing of a solar water heater for industrial application
50. Assistance in the manufacture of agricultural material specific to local conditions
51. Regional research and development and training centre for mini-hydropower generation

D. Metallurgical Industries sector

1. Extraction of nickel from oxidized ores
2. Technology for the production of high purity aluminium products for the electronics industry
3. Recycling and processing of aluminium industry wastes, such as red muds
4. Environment friendly scrap recycling
5. Advanced thin slab casting for steel flat products
6. Beneficiation of gold-containing ores
7. Extraction of gold by heap leaching and carbon-in-pulp operations
8. Beneficiation of iron ores (pilot plant operation)
9. Recycling of lead from lead acid batteries
10. New foundry technologies, including investment casting
11. Heat and surface treatment technologies including metal corrosion and protection
12. High-tech welding technologies and quality of welds
13. Advanced techniques for the production of tungsten wire
14. Electroslag technology, alloy plasma arc treatment and electron beam technology
15. Energy saving
16. Processing of nepheline and alunite into alumina and other by-products
17. Extraction of gallium from alumina
18. Extraction of titanium from ilmenite sands and ores
19. Production of high strength low alloy steels

20. Production and continuous casting of commercial and special steels

21. Small-scale forging plants and technologies

22. Establishment of a heat treatment centre

23. Development of the high-tech welding technologies and quality of weldings

24. Production of hard and soft ferrites from local raw materials

25. Development of alumina industry

26. Experimental tube digestion of bauxite

27. Preparation of a techno-economic study for upgrading the technology of an alumina plant

28. Bacterial leaching of copper ores

29. Heap and/or in situ leaching followed by solvent extraction and electro-winning

30. Feasibility of extracting gold from copper tailings

31. Technological investigation and comparative techno-economic evaluation for the commercial extraction of alumina from bauxitic clays

32. Techno-economic investigation for the production of de-ironed refractory bauxite

33. Sponge iron production

34. Energy-saving and environment-friendly technologies; waste utilization

35. Development of photo-voltaic cells with amorphous silicon

36. Agglomeration of chromite ores

37. Environmental protection in zinc-lead smelting

38. Computerized managed maintenance in metallurgical plants (procuring, customizing and developing software programmes)

39. Industrial waste processing from direct reduction sponge iron plants, utilizing blue dust and other waste materials

40. High temperature tube digestion of bauxite to alumina

41. Production of indium from copper containing raw materials

42. Production of co- and by-products of alumina

43. Production of special grade alumina for ceramic insulators, automative spark plugs

44. Technology for copper alloys used in electronics

E. Programme on clean technologies and industrial risk management

1. Compact used-oil recycling process

2. Linear tabular reactor for reclaiming used oils and decontaminating other hazardous wastes

3. Clean process for coal enhancement

4. Waste treatment for pickling lines and techniques for recycling sludges from pickling and settling ponds

5. Recycling, reuse and storage of fine dusts from electric arc furnaces and steelmaking slag

6. Total system for lime collection, storage, slaking and reuse

7. Waste water treatment from hot rolling mills (focusing on separation of oil)

8. In-plant environment monitoring methodology and instrumentation for air and water

9. Fine dust handling from sinter plants (focusing on improvement of existing direct and indirect suction systems)

10. Heat recovery from sponge iron plants and reheating furnaces

F. Other technologies

1. Biomass gasification

2. Energy conservation in the steel and textile industries

3. Commercial utilization of spirulina geitleri J. Di Toni (algae)

4. Detoxification of castor bean oil

5. Solar timber drying kilns

6. Polyfunctional pilot-scale plant for plant extraction

7. Integrated cassava processing

8. Wooden bridges

9. Maize milling using hammer mills

10. Ferro-cement bins (cylindrical)

11. Multi-purpose agricultural machine production

12. Agriculture hand tools manufacture

13. Coconut cream production

14. Desiccated coconut

15. Canning of sardines

16. Oil extraction from copra using a small package expeller mill

17. Freezing of prawns

18. Guava processing

19. Dehydration of chillies

20. Small-scale bakers' yeast production